The Builder.

VOL. XLIII. No. 2062. SATURDAY, AUGUST 12, 1882.

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American Activity among the Ruins of Assos.

THE Archæological Institute of America has published the first series of its classical papers, an octavo of 200 well-filled pages, liberally and handsomely illustrated. It consists mainly of a Preliminary Report of Investigations at Assos during the year 1881, the first year's work of an expedition sent out by the Institute. This is written by Mr. J. T. Clarke, who was assisted on the site more or less constantly by three architects, three graduates of Harvard College, chosen from numerous applicants, by Mr. Eliot Norton as volunteer, and Mr. J. S. Dillon, who furnishes a report on the geology of Assos and the Troad. Mr. W. C. Lawton contributes notes on the inscriptions found, and general archæology. The pioneers took the British Museum and Louvre in their way, and by the middle of April were settled at work well supplied with instruments, a library of 400 volumes, general apparatus, and,—not least important,—canned food. The work was carried on far into November, with as little interruption as was allowed by Turkish officialism, fast of Ramadan, and holidays of Greek saints. It speaks highly not only for the resources but also for the energy at command, that so much was done in the time, and that so explicit a report of what was done should so soon be given to the world. When it is added that not only is this investigation to be continued, and the general results embodied in a monumental work, but that the leading American colleges are already engaged in establishing a permanent school of Classical studies at Athens, upon the model of those of France and Germany already active there, it is impossible not to feel that the New World is repaying its obligations to the Old with admirable zeal. It is perfectly comprehensible that the Old World may experience a slight movement of apprehension at the prospect of losing the lead in such enterprises; the enterprises will be the gainers if emulation is thus stimulated. In the meantime, cordial greeting is due, and be it paid, to laudable and well-directed exertions; what also is due is careful study of such reports as that now before us, with a view to gather, and if it may be, also to give instruction or suggestion at least as to the precise information that is expected with most interest.

The name of Assos is familiar from its occurence in the Acts of the Apostles. St. Paul, on his way from Macedonia to Jerusalem, left his companions at Troas to go on by ship round Cape Lecton and take him up at Assos, whither he proceeded across the promontory on foot. About half way he would leave the temple of Apollo Smintheus,—lately recovered for art by the Dilettanti Society,—between him and the sea just before the road turned inland. The surveys and views given in the report exhibit his course as he approached his journey's end and the view that presented itself. He must have crossed the Greek bridge over the river Satnioeis, of which the piers, very artfully constructed with doubly-joggled courses to resist the sudden force of a swollen stream, still remain; he was then not half a mile from the street of tombs that led by a gradual rise to the principal gate, or, skirting the town, descended by a very steep incline,—"the steepest and stoniest imaginable,"—to the port. The Satnioeis is separated from the gulf to the south throughout its course by a long narrow mountainous belt, precipitous towards the sea; the plain which it waters, thus confined on one side, is far smaller than that of the Scamander northwards, but was celebrated in antiquity for its fertility. Assos was thus truly a city on the Satnioeis, and Mr. Clarke argues with much force that it is to be identified with the Pedasus, which Homer refers to as a seat of the Leleges on that river. The political history of Assos is all but a blank; it is not enumerated among the tributary allies of Athens. After her fall, it is found in the occupation of a Persian satrap, Ariobarzanes, who is in cordial alliance with her enemies, the Lacedæmonians, and he even abets the projects of Agesilaus against the great king, from whom, in concert with other satraps, he ultimately revolts. He seems to have obtained the command of the entire Troad as well as of Phrygia; his statue was found prostrate on the acropolis of Ilium when Alexander the Great visited it, and an omen for his enterprise,—favourable, of course,—was drawn from the circumstance by his ever serviceable diviner Aristander. After this the most interesting incident connected with Assos is the residence there of Aristotle with his friend, the tyrant Hermeias.

The acropolis of Assos is formed by the crater of a volcano, which was choked by a second flow of trachyte, the city being built upon a lower but still elevated plateaus around it. The summit was crowned by the temple which it was the main object of the expedition to examine; "the peak rose so steep that, standing within the peribolus of the fane, one could look down into the holds of the vessels in the port beneath, and so high that the foundations of the temple were at an elevation half as high again above the sea as are the finials of the slender spires of Cologne above the Rhine, or the apex of the great pyramid of Gizeh above the Nile" (p. 80).

This temple is remarkable as being the only Doric Greek temple in Asia Minor, except one of quite late date at Pergamon. Additional interest attaches to it, moreover, from certain peculiarities in the treatment of the style, which are open to be interpreted as either provincialisms or marks of an intermediate stage of development. The site and ruins had been described by many travellers before 1835, when M. Texier was commissioned by the minister Guizot to study the antiquities of Asia Minor, and made the examination which led to the removal of the sculptured slabs which are now in the Louvre. These are engraved and described, together with the architecture of the temple, with such detail in the vast work on the results of his expedition, published at the expense of the Government, that further exploration might at first seem needless. But Texier, unfortunately, acquired a repute as endowed with a special talent for inaccuracy, from comparison of his work in other more accessible places, for instance, at Old Smyrna (p. 10), and this more than justified a plan for going over his work again, and would have done so even had there been no other additional work to be done in the neighbourhood. It must be sadly said, after perusal of the present report, that even the best friends of the late so genia architect and archæologist will serve his memory best by accounting and apologising, as well as they may, for his deficiencies rather than by vain attempts to disallow or extenuate them Even a compatriot, M. Perrot, characterises the plan which he gives of another site as "*une mauvaise plaisanterie;*" at the same time, it is apparent that Texier took none of the pains of a practised impostor, as he in all frankness mentioned the short number of hours which had sufficed to put him in possession of materials for such a display of minute information This candour, no doubt, betrays a mischievous light-heartedness which artists and archæologists who take matters seriously will not be inclined to encourage, and can only condone with an effort. The following inaccuracies fill out certainly a formidable indictment. The remains show the orientation of the building to have varied considerably from the east to the south; Texier places it thirty degrees to the north of its true direction. The temple has only two steps, the French elevation shows three; the width of the building, given there as 13 mètres, is, in fact, 14·035 on the stylobate and 14·585 mètres on the lower step. These errors are particularly unlucky, as it is precisely in the three points of dimension on plan number of steps, and orientation, that the temple coincides so remarkably with the Theseum at Athens. "The excessive sack-like entasis of the shafts, which has given rise to so many wild theories, did not exist." "The mouldings indicated by Texier as existing above the frieze are wholly imaginary; corner blocks of the corona proving this were found, while

the constructive impossibility of interposing a continuous band of trachyte of only 0·106 mètres (=4 in.) thick, between the mighty stones of the Doric entablature is evident from the French restoration itself,—scaled though they are there to the millemètre as if accurately measured.

Now every item of this indictment may be true, we fear must be; indeed, we do not doubt is positively true; but even so we object to the introduction into the discussion of terms which do not advance the particular discussion in hand, and tend to heat tempers to a degree unfavourable to renewal of discussion on other points. Texier, after all, rendered services which should exempt him from contemptuous treatment. The most moderate expostulation, we are sure, will induce Mr. Clarke to wish unwritten and desire to withdraw imputations of "deliberate falsification" (p. 107), and "unparalleled effrontery;" may we add also to give credit to his predecessor less grudgingly for his correct recognition of a sculptured architrave,—an anomaly which it tried him so severely not to be able to get his architectural friends and colleagues at Paris to fairly submit to examination. However, the severity of the present explorers may not be without one valuable result if it helps to commit them to the extreme of scrupulous completeness as well as of conscientious accuracy in their own drafts and comments.

From the reference to the Theseum it will be seen that the temple was on a small scale; its length on flank did not exceed the breadth of the Parthenon. Not a single drum of a column remained in position, but when the remains of the stylobate were cleared of earth, not only were the weathered traces of the flank columns found, but the position of the cella wall was shown by fine lines indicating its outer edge, engraved on the stones which formed its foundations, and continued on some surfaces of the natural rock which came up to the level. These incised foundation stones were returned at the back of the naos opposite to the second flank columns, thus showing a quite unusual absence of what, antithetically to the pronaos, has been called the epinaos, a blind but open recess between antæ.

The study of Greek architecture involves twofold functions which are analogous to those which occupied the earlier astronomers; the investigation of the theory of the ancient designers must be based upon a collection of accurately-measured details of the ancient designs; it is, of course, very difficult for the speculative to withhold from framing hypotheses as to the principles of great artists, even while allowing the insufficiency of materials; the insufficiency of the materials may, indeed, only be discovered by the failure of repeated and persistently varied attempts to divine their secret, to wring from them the explanatory hint which will not only bring what facts are already in possession into order, but also guide all further explorations. But as in astronomy, the theorist must at last wait for the observer, or must himself be content to undertake the functions of an observer, before he can hope to indulge himself to any good purpose in his beloved speculation. Newton himself had to set aside his theory of the lunar system until more perfect records of past observations came to his hands. When Mr. Penrose undertook the survey of the Parthenon it was an incalculable advantage that the principle of application of curvature had already been recognised in some of its leading lines, and warned that it might be expected in others; but otherwise it was with as much wisdom as self-restraint that he carried through his work of minute measurement without disturbing himself at the time by endeavours to frame an ulterior theory as to the schemes of proportion which the original artists relied on and worked by.

Mr. Clarke, in his preliminary report, supplies a certain number of dimensions of the Doric temple, and incidentally institutes a comparison of them with a view to identify "a unit of measure employed in the building." His observations imply that he expects to find that principal dimensions,—as, for instance, the length and breadth of the naos, the width of its door, thickness of wall and diameter of column, and so forth,—were set out by a foot-rule, and that a comparison of the dimensions of these parts will betray the relation of this particular foot to the metrical system. Should this prove to be the case, it would prove that the architect of the temple of Assos, whatever might be the case with his contemporaries, worked upon a very different system to the architects of the Parthenon. Mr. Penrose found that the standard Greek foot measured most accurately the breadth of that temple on the top step, a breadth of 100 ft.; but it was much if he could detect its direct application to a single dimension of a leading division or detail elsewhere. An examination of the figures supplied by Mr. Clarke go far to show that it was the same at Assos. The foot-rule, as we all know, is the norm of all modern construction. The standard foot and its subdivisions measure off accurately all parts of a building and of every article of furniture within it. The contrast, therefore, of ancient and modern methods is most decisive; the ancient method of proportional evolution, of which the theory and its application have been fully made out in the case of the Parthenon, has received there its fullest justification. How far it is applicable at present is a question; it may be a bow of Ulysses which demands heroic powers to bend it. To what extent it was applied at Assos may prove to be difficult to ascertain; but, at least, there are certain glimpses of it.

It is noticeable, says Mr. Clarke, that the width of the side and rear of the pteroma (that is, of front and flank colonnades) is as nearly as possible 1-10th of the length of the stylobate; this relation of the most important divisions of the plan, he justly assumes, excludes, by its striking exactness, the assumption of a coincidence; but his farther assumption must be paused upon. He continues,—"It is hence extremely possible that a system of decimal feet was employed, or that 3·0335 mètres contains an entire number of the original unit of measure." The length of the stylobate is 30·335 mètres, which is assumed to be 100 ft. of 0·30335 metrical. The difference between this and the 0·308211 of Boeck is, indeed, but small, 0·00486=3-16ths of an inch.

But the Greek foot, as determined by Mr. Penrose, equals 1·01341 of the English foot (=0·30479 mètres), and by this proportion the Greek foot equals ·308866; which may be taken as coincident with the hundredth part of the length of the lower step of the temple at Assos, 30·885 mètres.

It seems, therefore, more probable that the primary dimension of the temple was set out upon this longest dimension of the plan.

Still, it is remarkable that it is on the top step, more properly the stylobate, that we find established the definite and simple proportion of length to breadth which is usually provided in the plans of Greek temples. 13 : 6 :: 30·335 length of stylobate : 14·001 to compare with 14·035, the measured breadth. The difference equals as much as 1½ in. nearly, but this may not be enough under the circumstances of the ruin to vitiate the inference. In the Parthenon a simple proportion, 4 : 9, is established as here, on the stylobate; in the Theseum, which otherwise has so much resemblance to this temple, on the lower step. There are six columns in front and thirteen on the flank, which seems to have suggested the proportion given to the stylobate; there are, in consequence, five intercolumns on the front and twelve on the flank. Had the columns been spaced equally, front and flank, the oblong of their lines of centre would have had the proportion, 5 : 12. As it is, the actual proportions of the stylobate alone oblige the columns, if we should not rather say were adopted to enable the columns, to be spaced more openly on the front than on the flank.

From the length of the stylobate...	30·335
Deduct one diameter of column...	0·915
	29·420

29·420 ÷ 12 = 2·451 for average flank columniation.

From the breadth of the stylobate...	14·035
Deduct one diameter of column.....	0·915
	13·120

13·120 ÷ 5 = 2·624 for the average front columniations.

If the columniations by the angles were contracted absolutely, that is, independently of greater dimension being given to the angle columns, those intermediate would, of course, be still further widened; and this relative extension would be greater in the case of the front columniations, already abnormally wide.

The difference between the two sets of average columniations (2·624 − 2·451 = 0·173 is as much as between 6 in. and 7 in.

Unfortunately the stylobate is so entirely destroyed at both ends, that all evidence of spacing of the angle columns is so far lost. This is an example of the too frequent disappointment of excavators, — the unlucky failure of testimony at critical points; the breaking short off of a clue precisely where perplexity is greatest as to which turning to take, which alternative to decide on. It only remains for the explorers to check a murmur, be thankful for what has escaped destruction, and to take care that what evidence can be recovered is at least done full justice to. The loss of the stylobate on both fronts leaves us without direct information whether the columns at the angles were of ordinary or enhanced diameter, and whether the adjacent interval on the front followed the rule of those on the flank, and was uniform with the others beyond it, or whether it was reduced in span in accordance with the practice in other Doric temples. A chance still remains for obtaining a solution of this problem. It seems likely that between the results of the present expedition, and that of the French, all the architrave stones, of one front at least, have been recovered. We may expect that in the promised "monumental publication" of the Americans the accurate details and measurements of each stone will be set forth; the angle architrave stones will be betrayed by including a complete gutta tablet or regula at one extremity, and if the lengths of the others are uniform, they will mark intervals from centre to centre of columns. So, again, it is possible that careful dimensions of all the capitals found may exhibit some as so far exceptional in breadth of abacus and diameter below echinus, that they must have belonged to stouter columns.

Had Texier examined the capitals which he recovered, and after a fashion measured, with a little more care, he would have escaped a sharp rebuke from his successors for overlooking one quite unexampled peculiarity; the flutes or channels, of which there are only sixteen, finish upon the lowest annulet of the necking, and here by their relation to the faces of the abacus they betray the curious fact of being set, not with centres of channels, but with arrises parallel to the axis of the building. We must, however, still await a specific report whether this disposition of the flutes was unvaried both on front and flank.

It was by another very unusual arrangement, as we have seen, that the walls of the naos westward were returned without any recess or epinaos, and at the same distance from the columns as on the flank. On the proper front the antæ of the pronaos ranged with the third flank column, precisely as in the Theseum, Parthenon, and numerous other examples.

The interior of the cella measures approximately 17·865 by 6·765, which gives the long proportion, accurate to between 2 in. or 3 in., of 3 by 8. No indication was found of this apartment having been divided by a cross wall, yet it seems strange that a mosaic pavement, which we should expect to find was just in front of the place of the statue, should have been restricted to the half of it nearest to the entrance. It is composed of black and white marble cubes, and is hypothetically ascribed to a late restoration. But the border is less suggestive of the developed wave ornament than of the spirals of Mycenæ and Orchomenos; and the alternate diamonds of the centre, white and black between white and black borders, accord rather with primæval than with the later taste, of which a good example is given in a mosaic from the gymnasium.

It is stated that the shafts of the columns are without entasis, and it must be accepted as proved that they were destitute of any such exaggerated curvature in profile as Texier exhibits; but it is not quite clear whether Mr. Clarke appreciates the difficulty of determining the existence or non-existence of entasis when only the unmatched scattered fragments of different columns have to be dealt with. A reference to the appendix of the fourth part of the "Antiquities of Ionia" will help to explain this; Mr. Penrose there sets forth in detail the calculations and comparisons by which he certified at once the height and the entasis of the columns of the temple of Athene Polias at Priene.

The height of the column seems not yet to be certainly decided; but as shown,—and any error must be but trifling,—it is a little less slender than that of the temple at Ægina; like that, it is nearly equal in height to half height of the façade, and thus, at least, comes nearer

to the Attic principle of giving it an excess than to the Sicilian Doric. It is more openly spaced than the Theseum or the Æginetan hexastyle; a difference which rather exaggerates the heavy effect of the entablature. The type of the capital is most especially archaic in its flatness and projection; already at Ægina a decided approach was made to that erectness of profile of the echinus, which brought this member in Athenian architecture into perfect harmony with the composed and dignified character of the style.

Minor peculiarities of the entablature are the omission of guttæ, the alternation of broad and narrow mutules accordingly as they surmount metope or triglyph; the triglyphs above columns were also narrower than the intermediate ones. The absence of guttæ may be most probably a true omission, but the variations of mutules and triglyphs, so far as not due to the contingency of termination at the angle, are doubtless to be regarded as instances of arrested development; of a pause in that progress to full discipline of all the elements of the order, which ultimately established a canon of uniformity that trusted for relief to refinement of outline and elegance of enriched details, sculptured or coloured.

The most startling divergence from general treatment of the order is in the bold sculpture bestowed upon the architrave. This has been long known from the very good engravings of Texier; the American explorers have discovered several in addition, including some very important portions of the series. The consideration of these is a subject apart. As matter of architectural history it would be interesting to know,—but the knowledge is likely to elude us,—whether this treatment followed established precedents or was an original departure from the better practice of a perfectly plain architrave which happily became universal, or nearly so. The Nereid monument of Xanthus, in Lycia, seems to have had a sculptured architrave, but this Ionic structure is of much later date. It is remarkable that the Lycian antiquities supply another parallel in a bold series of sculptures of uncertain application,—boars and lions and other animals and satyrs in the same crouching position to enable them to range,—which is given to a Hercules at Assos.

This notice, however, is now quite long enough for what only professes to be a preliminary report. We shall await with interest the completed details that are promised, and further results of continued exploration of remains which Colonel Leake considered to present the most perfect idea of a Greek city that is anywhere obtainable.

Geologists will be interested in the report, which may be studied in conjunction with the valuable essay of Professor Virchow on the geology of the Troad. As regards inscriptions found, a bronze tablet has been preserved to show that there was a period when the citizens of Assos could strain the usual conventional sycophancy of an address,—it is to "the God" Caligula,—from fulsomeness to profanity. It is pleasanter to turn from the craven invocation of "the Saviour and God Cæsar Augustus," to another inscription which preserves a more honourable expression of natural sympathy engraved below the bas-relief of a dog; the following is a literal translation:—

Anaxeus here has his playmate the dog Parthenope buried;
Such for the solace she gave giving requital in turn.
Even for dogs has affection its meed, as now also has this one,
Still to her master attached, here been allotted a tomb.
Looking hereon, make thyself a true friend, who, with zealous affection,
Will, as he loved you in life, care for you also when dead.

Penzance Scientific and Industrial Exhibition.—A Scientific and Industrial Exhibition is to be held in Penzance just after the close of the Royal Cornwall Polytechnic "Jubilee" Meeting at Falmouth. The Exhibition is projected for the purpose of bringing together a display of apparatus and products illustrative of the modes of working and results attained in the various departments of science and industry. Examples, models, diagrams, or descriptions of obsolete or disused machines or processes possessing historic interest, will be eligible for exhibition; but the committee more particularly desire a collection of the most approved modern appliances in use at the present time. It is proposed to open the Exhibition on Monday, the 25th of September, and to keep it open during one week. Short lectures, descriptive of some of the exhibits, will be given at intervals.

GENERAL ART-EDUCATION.

The phrase, "art-education," implies two distinct forms of cultivation; the instruction in the art of delineation or shaping, whether in drawing on the flat or in modelling surfaces, and the more decisively intellectual power of conceiving forms and ideas, and of truly appreciating and understanding already existing creations of art. If we were to put it in a more epigrammatic way, we might say that art-education was concerned either in teaching us to draw what we see, or to see what we want to draw. The latter expression is illustrated by the story of Fuseli saying to a student who was looking vacantly before him, "What do you see, sir?" and on receiving the answer, "Nothing, sir;" rejoining, "Then you ought to see something, sir; you ought to see before your mind the form you are intending to draw, and if you do not you will never be a painter." Fuseli, it is certain, saw before his mind's eye occasionally very strange shapes, and it would have been well for him if he had looked a little less at them and a little more at the material facts of Nature, which he said "put him out." But for all that there is truth in his remark, as indicating how the mind, in original composition, should command the pencil, and not trust to the pencil, in its gyrations on the paper, evolving an idea. The same criticism was made by Mr. Street, in one of his lectures, in regard to architectural drawing. To see some people draw, he said, you would suppose that they looked to the pencil to guide them, instead of their own will guiding the pencil.

These two sides of artistic attainment,—the power of drawing what is seen, and the power of original production, stand on a very different footing in their relation to the powers and the requirements of the mass of the people. To expect the power of original production, in a sense that would be worth anything, from any but a very small minority of mankind, would be out of the question even with the most perfect system of artistic instruction. Few men, either writers or artists, have really original ideas; the majority among them who succeed to a respectable extent merely repeat previous ideas in a slightly modified form, with more or less of their own manner of execution; and even manner of execution is copied from others, consciously or unconsciously. Many works so produced may be very agreeable in themselves, and give legitimate pleasure to many people, but they have no permanent value, and do not last beyond their own day. The power to produce even these, however, requires the same degree of technical instruction as is required to make a great and original artist: the training must be given to all who feel moved to seek it, the genius will show itself where it exists; training cannot evolve it, but can only furnish it with the power of expression.

Even those, however, who can produce independent works which are not characterised by originality of genius and of manner, are a minority in regard to the mass of mankind; at all events, this kind of power even is not acquired without almost entire devotion of time and energy to it, which cannot be given except by those who intend to live by it, or who are of independent means. To the majority outside of these lines a training in art has another kind of value. It is a means of education, of calling out faculties of the body and mind which would otherwise lie dormant, of opening sources of intellectual pleasure, and of giving, by means of the power of drawing, a more accurate perception of the forms of objects, and a capacity for representing and describing objects in a manner far more direct and more universally intelligible than any written description can be. This practical value of drawing, it is needless to remark, has been borne witness to by not a few employers of labour, who have given it as their experience that a workman who could draw and could properly understand a drawing, was always more capable, more useful, and better able to understand his instructions than one who could not. The practical value of drawing may be recognised, even apart from its operation on the understanding, in its power of promoting greater delicacy of manipulation in operations quite apart from that of drawing in itself. One of the best amateur artists of the day, as is well known, is an eminent surgeon, who has declared that he first took up etching because it was a recreation which would have the effect of rendering his hand more delicate for his important professional work. One of the best remarks in regard to this result of training in drawing was one we heard given by a lady who was a candidate for a School-board election, and was asked somewhat indignantly, by one of her working-class constituents, what was the use of teaching drawing in the Board Schools to girls who were going into service, for instance, and why their education was not confined to things that would be useful to them in their future life? The reply given was that there was no more common complaint against female servants than about their clumsiness in handling fragile things, such as glass and china, and their continual breakage of such articles in consequence; and that a training like drawing would probably do more to render the hands more safe, careful, and sensitive in touch, than any other influence that could be named. The lady who made this sensible and shrewd answer, on the spur of the moment, we are glad to say, gained her election, and is now an active member of a large School Board. Of course, it might have been said in addition that a knowledge of drawing would give a domestic servant even greater advantages than that, in providing her with a more interesting and sensible occupation for her leisure times than flirting with "policeman X"; but the answer cited in favour of drawing was perfectly true as far as it went, and probably the best practical reply to the style of criticism which evoked it.

It is the comparative prevalence now of this idea of drawing as an educational influence on the mind and the hand, which has led probably to the wide-spread change in the ideas of art-instructors and of educated persons generally in regard to the manner in which drawing should be taught at schools or to children at home. The idea of education in drawing, in the days when men now in middle life were at school, consisted in the production of copies of landscapes or of heads, executed by pupils who knew nothing of the anatomy of the head, nothing of the perspective or of what may be called the construction of the landscape, and made to look presentable, or what was supposed by parents and guardians to be presentable, by the touching up of the master. This idea of drawing is certainly not extinct yet, but it now only lingers in second-class schools and in families where there is no pretence of understanding or caring about art, save in a merely perfunctory manner. The influence of the principles the promulgation of which is more due to the teaching of the South Kensington Schools and of their branch schools in various parts of the country, than to any other source, has permeated far and wide, and has to a great extent revolutionised the artistic training given in our schools.

The essence of the change which has come about is this,—that it is now recognised that learning to draw does not mean merely learning to copy on one flat surface the marks on another flat surface; in other words, making a drawing from another drawing, but that drawing means the power of representing on a flat plane any object or group of objects that is placed before the draughtsman, and that no one can be said really to draw who does not understand how to represent the outlines of any object, however complicated, by lines on a sheet of paper, put in not by the lucky help of a natural quickness of the eye, which may at times enable a pupil to draw what looks right by a happy chance, but in accordance with a definite and scientific knowledge of the relation of appearance to reality, and of the method of representing this relation on paper. That is the one-half of the now recognised truth about artistic instruction; and the other and equally important half of it lies in the recognition of the fact that no study of Nature at second-hand, from a "first," "second," or "third" drawing-book, can give real training in the knowledge of what Nature really is, and of the beauty, delicacy, and infinite variety of natural forms; that Nature must be studied seriously and zealously from her own realities, and not from copy-books; and hence that to draw one sprig or flower correctly from Nature is more to the purpose, and teaches more, than to draw a whole landscape from a flat copy executed by another hand. The latter process neither teaches drawing nor teaches a knowledge of Nature; it only teaches a trick of hand which can be mechanically repeated. The study of a fine landscape-painting by means of copying it has, of course, as far as it goes, the same sort of value in relation to the superior landscape-painter's art which it has in relation

to Nature; it gives the student an insight into the manipulation of colours, and teaches him how the greater painter produced his effects, just as the study of Nature herself teaches him how Nature produces her effects, and how to reproduce them. But the modern system recognises that even the greatest landscape-painter's work is only a translation from Nature, not to be studied with a view of understanding Nature herself, but with a view of understanding the painter and his methed, and perhaps of learning from his work something about the way of studying Nature, and the means by which some of her effects may be reproduced, and gaining some new hints to be turned to account in the student's own studies from Nature.

Thus, at the present moment, the idea of instruction in drawing is a much more serious one than in the days when pupils made sketches and masters furbished them up. The best instruction in drawing is now directed to insuring that the pupil thoroughly understands what he is doing, and why he is doing it; that he understands the meaning of each line that he makes, and the construction of the object which he draws, and that his eye for form, proportion, and perspective is cultivated step by step as he proceeds. The system adopted in the South Kensington first-grade drawing-books, which we noticed some time ago, is admirably calculated for this object of making the pupil think, and exercising mind, eye, and hand simultaneously. In those books the effort is made to prepare the student for drawing from actual objects, and at the same time to supply to some extent the training of eye and hand which such drawing furnishes, and to lead up to it by examples and a method especially selected for those ends. The student is exercised first in drawing simple geometrical forms which cultivate in him the perception of size and contour and proportion, as well as neatness and accuracy of hand; and both in these and in the more advanced and difficult objects which present problems in perspective and foreshortening, the invariable rule is that the copy shall be made on a different scale from the original: so that nothing can be measured or mechanically copied. It would be difficult to imagine any system wider apart from that on which the so-called teaching of drawing was once based in even our best schools, and the gradual and increasing adoption of such a system as this cannot but have a most notable result on the general power of drawing among the rising generation of children who are put through it.

In regard to this subject of art-instruction some very interesting information is put together in a little book by Mr. Hulme,* whose name is known to our readers in connexion with some able works on artistic design, especially in relation to the adaptation of floral forms in art. Mr. Hulme's book gives his general ideas as to what art-instruction should aim at, which are in the direction of that scientific method of which we have been speaking; and gives a brief account of the system pursued at various important educational establishments in different parts of the country. The information given in this portion of the book gives an account of the method pursued at the Board Schools, the University Local Examinations, at the various military and engineering colleges, at the leading public schools, and in the more theoretic professional teaching at the Universities; and at such more specially artistic schools as the Royal Academy, the Slade School, the South Kensington School, and the Institute of Architects,—the latter referring, of course, to the work appointed for prizes and medals, as the Institute is not an instructing body otherwise than in this sense.

It is surprising and satisfactory to learn from this interesting *résumé* how prevalent now is the scientific system, as we may call it, of teaching drawing, in the principal educational institutions in which it is taught. We find evidence that in almost all these instances, where drawing is taught, it is taught upon a fairly good method and on sound principles. The defects of the old system or want of system appear to survive mainly in the smaller middle-class schools, where naturally reform in such subjects is slow to make its way. Probably the reform would be accelerated not a little if it were once fairly recognised that there is a practical value in the power of drawing, for men who are in trade and commerce even, and that it is not a mere elegant accomplishment for ladies and gentlemen. In the larger public schools, such as Eton and Rugby, the mistake is that drawing is only voluntary, although it appears to be well taught to those who desire and seek to learn it. As Mr. Hulme says, few schoolboys are likely to do anything voluntarily in the way of work. And as drawing taught on the scientific method really is work and not mere trifling with brush or pencil, it may be surmised that only a very strong turn for drawing on the part of the pupil, or the direct orders from home on the part of the parents, lead to the filling up of the drawing class. Among University men of the present day, from which class most or all of the masters at our large schools are recruited, there still linger the remains of the old superstition, that drawing should be an "extra," somewhat like dancing; an elegant accomplishment, not to be put on a level with classics and history and other serious studies. The next generation of schoolmasters will probably know better themselves; to those of the present generation it may be urged that drawing is a most important element in mental and bodily training, and that up to a certain point, that is to say, as far as concerns the practical handling of the pencil and the practical power of copying an object when seen, and of representing in correct perspective an object which it is desired to represents,—so far as this, drawing can be almost as certainly taught generally as writing, and ought to be so as a part of every man's education. The question of artistic feeling in the higher sense is a different one; it only exists at all in a portion, perhaps a minority, of boys and men; though a preliminary training in practical drawing might not infrequently bring out evidence of latent artistic taste where it would never have shown itself or been suspected had not the capability for the expression of it first been imparted. The true solution of the problem for general schools would be, as Mr. Hulme observes, a compulsory class supplemented by a voluntary one. The elements of drawing, scientifically taught, should be as much a compulsory subject as grammar or writing; and when once this is established we should not have the curious spectacle, which we have sometimes seen, of a great publishing firm, which would on no account publish bad and ungrammatically-written books, being quite willing, nevertheless, to publish books containing illustrations violating the first rudiments of the grammar of drawing and perspective, and seeing nothing to be ashamed of in this; and after the course of a few generations of compulsory teaching of drawing, people will read about the men who could not draw in the present day, as we now read about barons and knights and gentlemen of old time who could not write their names. When the elements of drawing are once made compulsory, then the voluntary class of drawing could be filled by those who have shown such special aptitude and developed such a love of art as to render it desirable that their talent should receive further cultivation, even if it were at the expense of some of what are now considered more regular school studies. There ought to be an effort to make some such distinction in reference to special tastes and powers as boys rise higher in a school, and the head authority should surely take some general survey of the reports of the under-masters, and see whether these indicated any special aptitude which could be developed within the machinery of the school. Mr. Hulme quotes a significant instance of a case where he gave a boy's character as "in every respect admirable; most sorry to lose him;" while a master in another department endorsed the same boy's papers, "uniformly idle and indolent; so long as this apathy continues he cannot hope to succeed in anything." As a fact the boy succeeded as an artist, and a comparison of the two reports might have led a discerning Head to see that; in reality, the boy had special aptitudes which it was worth while specially to cultivate, and which the pupil himself was probably cultivating as well as he could. Another point Mr. Hulme touches upon is the questionable position in which the art-instructor still often finds himself in relation to the other masters of the school. This is one of the old superstitions. We can remember when at school that, while every other master who had not the prefix of "reverend" enjoyed the "addition" (as it was called in Shakspeare's day) of "esq.", the teacher of drawing, who was a trained artist, and, as a teacher, in advance of his day, appeared in all the school-papers as "Mr. ——" only! This would now, we hope, be called snobbish; but it is only fair to remember that there is another side to the matter, in regard to the freedom and equality of social intercourse among the masters at a school. As far as the purposes of social life go, general culture, especially that of University life, does give a polish of mind and manner such as art-training by itself certainly does not necessarily give; and it is for the art-masters to take heed that they do not neglect the general culture of their minds in the special study of their own subject. This is certainly the case in some instances, and it is impossible that a man who lets himself run in one groove in this way can take with ease a place in social life along with men of broader culture.

The first chapter of Mr. Hulme's book, which gives his general views on art-instruction in schools, should be read by those interested in the matter; it contains a great deal of good sense, and little that we should be disposed to call in question or to dissent from, and there are many very useful hints for the consideration of those who are called upon to instruct beginners in drawing. One remark we may quote, on account of the practical exemplification it gives of the value of collections of casts, if only as stimulants to a love of art. Their presence, the author says, is always an advantage; the merest beginners learn something from looking at them, and are led to anticipate the time when they may be able to draw them; and he was struck by the spontaneous remark of a cabinetmaker who was doing some repairs in the class-room, and who looked round at the head of Zeus, the Parthenon frieze, and the Venus of Milo, and said, "Ah, sir, what would I have given when a boy to have even worked at my trade in the same room with these!"

* Art-Instruction in England. By F. Edward Hulme, F.L.S., F.S.A. London: Longmans, Green, & Co. 1882.

THE CONTRACTS OF CORPORATIONS.*

There is probably no legal question which more clearly shows the necessity for a code of English law than that of the rights and liabilities of corporations on contracts not entered into under seal. It might be possible to set the whole matter at rest in comparatively a few sentences; but it remains one of the most doubtful questions which can be considered by a lawyer. Mr. Pollock, in his admirable work on the law of contracts, concludes his remarks on this subject by saying,—"It is much to be wished that the whole subject should be reviewed and put on a settled footing by the Court of Appeal, and that those cases which are already virtually annulled should be expressly declared to be no longer of authority." We would, indeed, prefer to see the matter settled with many other legal questions by a code which should have received the sanction of the Legislature. But as the subject is one which largely interests the readers of the *Builder*, and as, indeed, many of the decisions which have been given on the subject have arisen out of contracts for some kind of building or plumbing work, or in respect of the supply of materials, it may not be amiss to state in a few words how the subject now stands. The old law was, that a corporation could not enter into a binding contract except under their common seal, and though such a practice has been declared by a well-known judge to be "a relic of barbarous antiquity," we are by no means sure that a hard-and-fast rule such as this is not the most satisfactory. It may often cause hardships; but as every one knows the rule, any one who enters into a contract with a corporation without it being sealed does so carelessly, and cannot be pitied if he suffers for his heedlessness. But this rule soon became relaxed, to the extent that contracts as to small matters of daily necessity need not be under seal, from what has been termed "the principle of convenience amounting almost to necessity." Thus, for example, when a municipal corporation were the owners of a graving dock in which ships were placed in turn,—the dock being, in fact, let to the shipowner by the corporation for the repair of vessels,—and a ship entered the dock under the ordinary unsealed agreement, some breach of contract took place, and the Court de-

* There was a question lately in the *Builder* as to the right of a corporation against the contractor. These abstract questions can seldom be answered without misleading the questioner who has not stated the facts of a case; but probably the following short general sketch as to the contracts of corporations may be useful.

cided that, though the contract was not under seal, yet this did not prevent it from being a binding one. The ground of decision was the principle already stated, the agreement for the safety of the ship being an act of daily necessity to the Corporation. It is clear, indeed, that to go through the formality of sealing a contract each time a ship might wish to enter the dock, perhaps for a short examination of its condition, would be obviously and inconveniently absurd. But the exception to the rule in regard to trading corporations has been placed on a much wider footing, for all contracts made in the ordinary course of business are valid without being under seal. This exception was finally declared to be the law in the year 1869, in a case in which, said Chief Justice Cockburn, the Court was asked to hold that the old rule as to corporations contracting under seal applied to corporations constituted for the purpose of trading; the contrary, however, was now, he stated, to be considered as settled law. So that in this very case, when a colliery company contracted with an engineer for the erection of a pumping machine and engine for use in the colliery, and paid him part of the price, and he refused to deliver the machinery in question, it was held that the company could maintain an action against him. Conversely, if the company had received the engines and had not paid the engineer for them he could have sued the company for their price; or again, if the company had refused to take the engines, and the engineer had suffered damage in consequence, equally he could have maintained an action for breach of contract. But the consequence of this decision is that a number of cases to be found in the legal reports must be considered as practically overruled, whilst another and opposing series must be considered as good law. Thus, on the one hand, a decision that in an action for the non-delivery of iron pipes to a waterworks company, the contract was invalid not being under seal, is a wrong judgment; and one, that in an action against a gas company for the supply of meters it was immaterial that the contract was unsealed, must be considered as correct. So much for the law as regards trading corporations, where the exception is now so broad as to be almost a rule, but where difficulties often arise in deciding whether a certain contract is incidental to the general course of the business of the company.

There is, however, much greater difficulty in regard to contracts of non-trading corporations. In regard to some of these it is clearly settled that a contract is invalid unless under seal, and that is when by the Act of Parliament under which they have come into existence they are bound to make contracts under seal. Thus a local board, which is a sanitary authority under the Public Health Act, must, in order that its contracts may be valid if they are in respect of agreements above a certain value, have them sealed. But if even such corporation had made an important contract not under seal for the construction of drains and sewers, had paid for them on the completion of the work, and they had turned out to have been made badly and improperly, on the principle that when a corporation has done its part of the contract it may sue on it though not under seal, an action would lie against the contractor, though he could not sue the corporation if they did not pay him that which was due. This is, no doubt, a hardship, and the mere fact of so many existing exceptions to the general rule makes the oversight of a contractor in not having a sealed contract less blameworthy than it would otherwise be.

But, again, there are other non-trading corporations, such as guardians of unions, whose contracts are not strictly ordered by Act of Parliament to be in writing, and here there is a still stronger contrast between the cases, which have, curiously enough, never yet been reviewed by the Court of Appeal. The exception, however, seems still to hold good, so far as regards contracts for work to be done or goods supplied in order to carry out the purposes for which the corporation exists, and where the work has been done or the goods supplied. Thus, in a case which has always been regarded as the leading support of this proposition, water-closets were erected at a workhouse by the direction, and with the approbation, of the guardians, and Mr. Justice Weightman, in a lengthy, able, and elaborate judgment, decided, on the above principle, that the plumber was entitled to recover for this work. This case was approved in a more recent decision, in which the facts were that coals had been supplied to a workhouse; and, on the other hand, there exists an important case in which extra works executed, but not ordered under seal, also again for the guardians of a poor-law union, were decided not to be such as could be paid for unless under a sealed contract. It is true that this decision was given before that of Mr. Justice Weightman, but it cannot be said that, so long as it remains not actually reversed by a Court of Appeal, the law can be stated to be certain and without doubt. "It would, perhaps, have been better," said Mr. Justice Weightman, in the Cuckfield Union case, "and have avoided the uncertainty which now exists, if the old rule had never been relaxed." But the relaxation was made under pressure of what may be considered as practical and common-sense justice; and there is little doubt, we think, that, when possible, courts of law will endeavour to do substantial justice, even though the contract may not be under seal. The law is, however, very calculated to mislead contractors and others, because whilst they may recover, as we have seen, against some corporations for work done and goods supplied, yet against others which have, under recent Acts of Parliament, certain powers placed in them, they cannot so get their money because the Act of Parliament has a stringent proviso as to contracts being under seal. Our readers may remember that within the last two months we called attention to the case of Young *v.* the Corporation of Leamington, who were an Urban Sanitary Authority, and against whom the contractor was held to have no right of action. If, on the contrary, he had done work at the poor-house for the parish, undoubtedly he could have successfully maintained an action. Such an anomalous state of the law is intolerable. Either the judicial exceptions to the old rule are founded on a wrong principle, or else the Public Health Act, and any other Acts which contain similar clauses, are too stringently framed. That contractors do not as a body take some steps to have them considered certainly surprises us, because, having such strong judicial decisions to support them as are contained in the cases relating to unions and other corporations, they have good ground for saying that these Acts require amendment. It, no doubt is in the public interest that public contracts in which public money is spent should be as carefully prepared and executed as possible; but when public officials enter into contracts which should be sealed, and are not sealed, and so a contractor who has done work is unable to recover his just debts, although he would be able to do so against almost any other but a regular municipal corporation, then some kind of fine should be inflicted on these persons. If some such proviso were inserted in the Public Health Acts, it would be not only a defence to the public, but guard contractors against the carelessness of public officials whose duty it is to see contracts under these powers carried out in the manner which the Legislature has directed.

THE RAILWAY MOVEMENT OF 1881.

Although the railway returns for 1881 are not yet issued, an abstract containing some of their leading features is given in No. 29 of the Statistical Abstract for the United Kingdom. The general upshot is that while gross revenue has increased by 101*l.* per mile, or from 3,411*l.* to 3,512*l.*, working expenses have increased in a higher ratio, or from 1,877*l.* to 1,902*l.* per mile. The net result,—1,610*l.* per mile,—is varied to 1,744*l.* per mile by receipts for miscellaneous items, against 1,893*l.* per mile in 1880; and the average cost per mile, which in 1880 was 40,613*l.*, has risen in 1881 to 41,000*l.*

Thus the net earning on capital, which, in 1880, was 4·38 per cent., sank in 1881 to 4·27 per cent., which is almost exactly the average return since 1860,—the first year in which the data requisite for the calculation were given in the "Railway Returns." But the volume of traffic has risen, in this period of twenty-two years, from 2,661*l.* to 3,512*l.*, per mile, or by 31 per cent. The capital cost per mile has risen during the same time from 33,368*l.* to 41,000*l.*, or by nearly 23 per cent. The difference between these two increments, half of which, to say the least of it, might have been expected to be net gain, has been exactly swallowed up by the increase of the working expenses.

The steady increase of the capital cost per mile from 1863 (when it was at its minimum of 32,804*l.*) to 1881, (when it had reached 41,000*l.*), has been forty per cent. in eighteen years. In the former year the great trunk lines of railway were, as a rule, completed; and the branches and subsidiary lines which have since then been added to the system ought, it might have been supposed, to have been constructed at a lower price, thus lowering the average cost. Such has been the case with the well-arranged railways of France, which, in 1867, had cost 28,592*l.* per mile, a figure which was reduced by 1877 to 25,780*l.* per mile. In this latter year the goods and passenger mileage receipts in the two countries were equal, viz., 2,887*l.* in France and 2,881*l.* in England,—which latter amount was raised by the mineral traffic to 3,686*l.* It is difficult to understand the difference of the movement in the two countries, unless it is to be traced to the disastrous effects of non-remunerative traffic in England. The average return of net earning on capital in France, which, in 1841 was 3·11 per cent., has risen to 5·56 per cent. in 1877; while in England, as has been seen, it has not in 1881 exceeded the mean for the whole period under return.

Regarded by the light of this historic progress, the decline of a little more than 2¼ per cent. (from 4·38 to 4·27) in the earning power of the English railways for the year 1881 is somewhat alarming. No rule of business is more generally admitted than that profits increase as the volume of business increases. It is quite intelligible why this should be the case. Fixed charges, which are little affected by the increase of traffic, are spread over a larger area, and thus the same price leaves much more profit for 200 than for 100 units of sale. In France, the increase of volume from 2,741*l.* per mile in 1867 to 2,887*l.* per mile in 1877 was attended by an increase in earning power of from 5·10 to 5·56 per cent. The Belgian railways, on the other hand, have, by constant increment of their capital cost, been brought into a condition verging upon bankruptcy. Experience is of no value at all if facts of this grave nature do not lead the English shareholders to demand fuller and more businesslike accounts than those with which Parliament has been content. And this is more signally true when we reflect that the figures above given cover all the railways of the United Kingdom. Among them are to be found some of which the advance is as rapid and satisfactory as on the French lines. If we compare the net earnings on capital in two distinct groups of English lines, we shall find this strikingly manifested. The average net earnings on capital of the London and South-Western, the London, Brighton, and South Coast, and the South-Eastern Railways in 1871, together with that of the Metropolitan Railway in 1874, were 3·66 per cent. In 1880 the average net earnings of the same lines were 5·15 per cent. on capital,—an improvement of property at the rate of 40·6 per cent. in nine years. The average net earning power of the London and North-Western, the Great Northern, the Midland, and the North-Eastern Railways in 1871 was 5·89 per cent. In 1880 it had sunk to 5·20 per cent., showing a depreciation of value on the whole aggregate capital of these companies of 11·7 per cent. in nine years.

If this very glaring contrast, illustrated as it is by the returns of the French railways, does not stimulate the shareholders in the lines which are so steadily depreciating to look like men of business at what directors call their policy, it will be of little use to go to the trouble and expense of publishing any accounts at all.

Royal Association for the Promotion of the Fine Arts in Scotland.—The distribution of the works of art purchased for this year by the Committee of the Royal Association for the Promotion of the Fine Arts in Scotland took place on the 5th inst. in the Masonic Hall, Edinburgh, Councillor Walcot, in the absence of Lord McLaren, presiding. The chairman stated that the subscriptions received for the year amounted to 3,937*l.* 10s., a decrease on those of last year of 24*l.* 3s. The prizes, which were then balloted for, consisted of 32 works of art selected by the committee from the late exhibition of the Royal Scottish Academy, and comprised 22 paintings, 9 water-colour drawings, and 1 bust in marble. There were also 25 statuettes in statuary porcelain, after Sir John Steel's colossal statue of Burns in New York. The balloting was conducted by Mr. John Cowan, Beeslack, and Mr. Campbell Penney, C.A.

RESISTANCE NEEDED TO THE PRESSURE OF THE WIND.

In anticipation of the next quarterly volume of the "Minutes of Proceedings of the Institution of Civil Engineers," the report of a very interesting debate on resistance to wind-pressure has just been printed, in the convenient pamphlet form customary for such productions. The debate itself has possibly more value than the original contributions,—one from an American, and one from a French engineer,—on which it was based. At all events, these papers would have been none the worse if the writers had made themselves acquainted with the articles on the subject which have from time to time appeared in the columns of the *Builder*. For example, a knowledge of the two remarkable observations which we cited (September 4th, 1880) of the force of the storms of February 20th and November 16th, 1877, at Holyhead, might have modified some of the conclusions of the writers. We have now to call attention to one other valuable contribution to the study of a question which all the speakers admit to require much study, by several gentlemen who took part in the discussion; and notably to a law approximately determined by Mr. Thomas Stevenson. What, however, renders it an indispensable duty to call attention to the debate is the fact that two of the speakers, each of them a man of admitted eminence, are reported to have made such wholly contradictory statements as to the simple mathematical formula according to which existing tables of pressure have been computed, as to be enough to perplex and confuse the student of this important subject; and that, perhaps, all the more so, from the fact that this grave contradiction appears to have been unnoticed.

Mr. Hawksley, a past President of the Institution, stated very briefly and very clearly the general solution of the problem of the relation between the velocity and the pressure of wind. Without imposing on our readers more mathematics than we can help, we may say that we have gone through Mr. Hawksley's work step by step, and fully agree with its outcome; adding only, that the table takes no note of a small increment of pressure due to the compression of the wind-current itself, which does not, however, amount to more than about 2½ per cent. at a very high velocity. The ultimate result of Mr. Hawksley's algebra is the very simple and elegant formula "$p = \left(\frac{v}{20}\right)^2$, nearly;" where p = pressure in lb. per square foot, and v = velocity in feet per second. Dr. Pole, four pages further on, gives an equivalent formula, viz., $p = \frac{v^2}{400}$ nearly, but he states this to be expressed in miles per hour.

The consequence of this, which, by itself, might be a mere clerical error, is, that Dr. Pole goes on to observe that the pressures tabulated by Smeaton are double those arrived at by a true formula, and that they are "deduced by the formula, $p = \frac{v^2}{200}$ nearly." And this is not the limit of the mischief; for Mr. Airy (p. 91) cites an empirical formula recommended by the wind-pressure commission as $\frac{v^2}{100} = p$; where v is the maximum sum of the wind in miles per hour; so that the formula seems to be based, first on the formula given by Dr. Pole, and secondly, on the assumption that the maximum velocity at any portion of an hour is double that for the average of the hour. The wholly inadequate nature of the last assumption is evident to any practical man. Mr. Rogers Field (p. 97) has shown a variation in the ratio of maximum to mean pressure, during an hour, of from 1·5 to 15·9, to 1. That being the case, it is of no small importance to be quite sure whether Smeaton's allowance is, as stated by Dr. Pole, twice that demanded by theory.

The simple fact is, that the formula $p = \left(\frac{v}{20}\right)^2$, or $p = \frac{v^2}{400}$, nearly, is correct when the velocity of the wind is calculated in feet per second; and that Smeaton's tables appear to answer to a formula which at sixty miles an hour would be $p = \frac{v^2}{203}$, with the velocity stated in miles per hour. One hundred feet per second is equal to sixty-eight miles per hour, and it is obvious that the formula must vary according to the measure of speed employed. The subject is so important to the architect that we subjoin the two tables, one that of Smeaton, generally in use, graduated in miles per hour, the other that of Mr. Hawksley, which we give as fully reliable, graduated in feet per second. We are obliged to give the tables in sequence, and not in parallel lines, as in order to do the latter, we must recalculate one of them, which then would cease to be that of the author cited, and become our own. But we may mention that the pressure at 100 miles per hour, which, according to Smeaton's table, is 49·20 lb. per square foot, according to Mr. Hawksley's formula is 53·8 lb. per foot. And we think the higher figure is the true result.

The tables are as follows:—

I.—SMEATON.

Velocity.		Pressure	
Miles per hour.	Feet per second.	Pounds per square foot.	
1	1·47	·005	Hardly perceptible.
2	2·93	·020	Just perceptible.
3	4·40	·044	
4	5·87	·079	Gentle pleasant wind.
5	7·33	·123	
10	14·67	·492	Pleasant brisk breeze.
15	22·00	1·107	
20	29·34	1·968	Very brisk.
25	36·67	3·075	
30	44·01	4·429	High wind.
35	51·34	6·027	
40	58·68	7·873	Very high.
45	66·01	9·693	
50	73·35	12·300	A storm or tempest.
60	88·02	17·715	A great storm.
80	117·36	31·490	A hurricane.
100	146·70	49·200	A hurricane that tears up trees, carries buildings, &c., before it.

Mr. Hawksley's table is as under:—

Velocities in		Pressure in
Feet per second.	Miles per hour.	lbs. per square foot.
10	6·8	0·25
20	13·6	1·00
30	20·4	2·25
40	27·2	4·00
50	34·0	6·25
60	40·8	9·00
70	47·6	12·25
80	54·4	16·00
90	61·2	20·15
100	68·0	25·00
110	74·8	30·25
120	81·6	36·00
130	88·4	42·25
140	95·2	49·00
150	102·0	56·25

The general impression left by the discussion is pretty much the same as that which we endeavoured to enforce in our own previous papers on the subject. It was summarised by the President, Sir W. G. Armstrong, who "desired to express his strong opinion of the urgent necessity for experimental investigation in connexion with wind-pressure." There were, however, one or two contributions to the future positive knowledge of this subject which it is desirable to distinguish from calculations and arguments founded either on old or on imperfect and partial data.

Of these, that which strikes us as the most valuable accession to the general theory of wind-pressure was made by a member of an illustrious family of engineers, who may be said to have made resistance to storms their special province. Mr. Thomas Stevenson, who has already enriched science with the marine dynamometer, and with observations on the force of the sea (to which we referred when describing the principal lighthouses of our coasts), brought forward the result of researches on the law of variation of wind-pressure at different heights. In 1876 Mr. Stevenson made a series of observations on the Calton Hill, Edinburgh, with the view of determining the coincident wind-pressure at heights varying from 276 ft. to 1,600 ft. above the sea level. In 1878, furnished with a grant of 50*l.* from the Government Research Fund, he made experiments at small elevations of from 10 ft. to 50 ft. The result of his labours,—supposing it to be verified by independent observation, and illustrated by some mathematical theory of the principle underlying the law obtained,—will hereafter form a leading chapter in any exhaustive work on the pressure of the wind. It is to the effect that (when a height of 15 ft. above the surface of the ground is passed) the increase of pressure is denoted by a parabola with the vertex 72 ft. below the level of the ground. Hence Mr. Stevenson deduces the formula, $V = v\sqrt{\frac{H+72}{h+72}}$, which, for the standard height of 50 ft., at which he recommends that all anemometers should be placed, becomes $V = v\sqrt{\frac{H+72}{122}}$.

It further appeared that if x were taken as the velocity of the wind at H feet above the ground, the parameter of the corresponding parabola was $\left(\frac{x^2}{H+72}\right)$, and, as x varied, the parameter would vary as x^2, or as the square of the velocity of the gale. H and h are, of course, the heights in feet of the higher and lower stations above the ground, and V and v are the respective velocities at these levels.

It is remarkable that, in a discussion on this subject in the theatre of the Institution of Civil Engineers, due attention should not have been called to the experiments made in 1846 on the resistance to railway trains at different velocities, and to the full debates in which Mr. Robert Stephenson, Mr. Brunel, Mr. Bidder, and other engineers took part, on these experiments. Velocities of as much as seventy miles an hour were attained at that time by the locomotive; and although the results obtained were calculated in pounds of resistance per ton of train, in which shape they now form the bases of the tables in our works on locomotion, the conversion of this into pounds per square foot is not impracticable; and a verification of theory up to a very high velocity is here attainable.

Many of our readers, however, will turn with more eagerness to such remarks as apply to the resistance of definite structures to storms of approximately known violence. It is to this practical outcome that the architect may naturally be most ready to turn. Mr. E. A. Cowper, who rarely speaks on a mechanical subject without adding to the knowledge of his hearers, referred to two chimneys near Birmingham, one of which did come down in a storm, and the other did not. We wish that he had mentioned the dates; for being, in 1839, familiar with the locality, we are inclined to think that by the chimney at King's Norton, near Birmingham, he must refer to a very beautiful chimney which, in that year, stood at the Lifford Chemical Works, close to the crossing of the Birmingham and Worcester Canal by the Birmingham and Gloucester Railway. That chimney, however, was not 406 ft., but 368 ft., high. It was built of curved bricks, specially moulded for the purpose, in,—if we remember rightly,—four gradations of size. It was one of the most perfect examples of brickwork ever reared in England. The draught that it caused was enough to hold up a heavy plank, if laid vertically against an opening into a flue connected with the chimney. It answered its purpose of keeping the whole of the works free from gaseous effluvia perfectly, and the vast train of smoke which it threw, stretching for nine miles before it struck the distant hills, formed an anemometer on an unusual scale. The fall of this chimney we believe to have been due to the stoppage of the works. The fires were put out,—the draught ceased. The chimney became weak; probably the sulphuric acid and other gases had exerted an eroding effect on its materials. We saw it on one occasion bending to its fate, and on another, broken, as Mr. Cowper says. But we hold that had the works been uninterrupted the chimney might even now be standing.

We may add a curious incident which occurred at the completion of this fine chimney. The man who ascended to remove the scaffolding, having done his work, threw down the rope, and remained on the top of the stack, 368 ft. above the ground, without any means of escape! Incredible as it may seem, this is not a singular instance of absence of mind among these "Steeple Jacks," as they are called. We were not on the ground at the time, although we knew the place well soon after, and, therefore, cannot speak with certitude, but think that a rope was sent up to the man by the agency of a kite. But it was either on that, or on a similar occasion, that when all the bystanders were struck with awe, the wife of the isolated man called out to him to cut the top row of his stocking, put his knife in the foot of it, and let it unravel its way down. "It 'll haud," she

cried, "it 'll haud sure. I knitted every stich of it mysell." And a rope was sent up by the yarn thus unravelled.

On a chimney like this, the effect of such a law of increase of velocity as that indicated by Mr. Thos. Stevenson would be notably perceived. During the erection of such a stack observations of no small value could be made; and, indeed, copper rods might be built into the outside of the tube, so as to allow of ascent for purposes of observation. According to Mr. Stevenson's formula, if there were what Smeaton calls a "pleasant brisk breeze" of ten miles an hour at 15 ft. above the level of the ground, the speed of the same wind at the level of the chimney-top would be 22·47 miles an hour, and the corresponding pressure would rise from under ½ lb. to over 3 lb. per foot, less the reduction for the cylindrical surface. This pressure, of course, is very moderate. But with a storm the increased proportion becomes very serious.

The chimney at the Port Dundas Works, Glasgow, has previously been referred to in the *Builder* as the tallest chimney and one of the loftiest masonry structures in the world. Its height is 454 ft. above the ground. If the wind were blowing, as before estimated, at ten miles an hour at the surface of the ground, its velocity at the height of the top of this chimney would be 24·59 miles an hour, and the pressure in proportion.

So important do we consider the two investigations of Mr. Hawksley and Mr. Thomas Stevenson, above explained, that we have computed a table of reference for the architect, based on the formulæ proposed. We have taken as our starting-point the velocity of sixty miles an hour at the level of 15 ft. above the ground. We very much question whether this has ever been exceeded in this country, except in such wholly exceptional cases as the architect can no more be called on in duty to provide against than he can against the not wholly impossible danger of earthquake. In any situation, however, where any evidence is forthcoming that a greater speed has been attained at this level, it will be proper to make a corresponding correction in the table. But assuming this speed, which is that assigned by Smeaton to "a great storm," we have applied Mr. Thomas Stevenson's formula to determine the coincident speed, and the corresponding pressure, at heights of from 50 ft. to 450 ft. To the pressure thus obtained we have added, in a separate column, the factor of safety of + 33 per cent. The resulting pressures are high, but we think that no physicist will venture to say that they are (if we accept the purely scientific value of the first formula, and the experimental authority of the second), unlikely to occur in such a storm.

ORIGINAL TABLE OF RESISTANCES TO WIND.

Height above ground.	Speed of wind.	Pressure.	Factor of safety.	Total.
Feet.	Miles per hour.	Pounds.	Pounds.	Pounds.
15	60·0	19·91	6·62	26·53
50	70·8	26·93	8·97	34·90
100	84·44	40·83	13·61	54·44
150	95·4	45·74	15·23	60·93
200	105·6	59·98	19·99	79·97
250	115·2	71·40	23·80	95·20
300	124·0	82·90	27·63	110·53
350	132·0	87·98	29·32	117·30
400	139·2	104·24	34·74	138·98
450	146·9	117·50	39·16	156·66

We think that the above table will be found to explain many facts that may at present be regarded as contradictory. The moment that the idea is grasped that the velocity of the wind increases with height above the ground,—a fact as to which there can be no debate, whether the increase of velocity follows Mr. Stevenson's parabola or not,—it becomes apparent that no observation, whether of speed, of pressure, of resistance, or of overthrow, has any exact value unless the height at which the observation was made be noted.

Thus in the case of the Tay Bridge, the destruction of which has given the impulse to the inquiries with which we are dealing, the height of the rails above the water was 92 ft. To this has to be added the depth of the girder, but as this was not a plate but a lattice, it would require an examination of the drawings to ascertain the mean height of the centre of exposed surface. Taking it roughly at 100 ft. above the water, it will be seen from the preceding table that the pressure at this height was 40·83 lb. on the superficial foot, if the storm was moving at sixty miles an hour at a height of 15 ft. from the ground. Now, the speed of the storm of the 28th of December, 1879, was measured at different points. The measurements all differ, but the respective heights of the several anemometers are not given. It is possible that if this were done a closer accordance would be evident than now appears. The respective shelter or exposure of each site has to be taken into account. At Seaham, near Sunderland, the speed of the wind was forty miles per hour; at Aberdeen it was sixty-three miles per hour; at Glasgow it was seventy-one miles an hour, actually rising, it is stated, in the three minutes from 7·15 to 7·18 p.m. to 120 miles per hour. Now, if, on these measurements, we estimate the speed of the gale which struck the bridge at seventy miles per hour at the level of 15 ft. above the surface of the river, the velocity of the blast of wind that struck the girder must have been close upon 100 miles per hour. To allow the factor of 33 per cent. of safety against such a blow makes the requisite strength of the structure, as against the wind, come to a resistance of between 60·93 lb. and 79·97 lb. per square foot. It is tolerably clear that if Mr. Thomas Stevenson's law had been known and accepted at the time of the construction of the Tay Bridge, a very different view would have been taken by the designer of the wind-force against which he ought to provide. And we may add that had this law been discovered between the dates of the erection and of the overthrow of the bridge, and brought before the scientific world during the inquiry which took place as to the catastrophe, a very great mitigation of the blame which the engineer took to himself would have been the result.

It will now, we trust, become apparent that our scientific knowledge on the subject of the provision that ought to be made by the architect for resisting the force of the wind is very considerably advanced by the discussion at the Institution; far more so, in fact, than in the haste of debate some of the eminent men who took part in the discussion were ready to admit. That the collection of more observations is desirable we fully agree. And we think that Mr. Wilfrid Airy put the thing in the right light when he spoke of the value of the evidence of seafaring men. The question of the breadth of the wind-waves might certainly be far better illustrated by synchronous marine observations than by any other method as yet attainable. On the other hand, any measurements of either velocity or pressure taken at sea would require very careful correction for the error due to the motion of the vessel itself. We look forward with hope, moreover, to the results of the experiments promised by Mr. B. Baker.

But while such interesting questions as those that regard the comparative pressure due to the velocity of the general storm-path across a country, and the points of intensified pressure in that general path, whether resulting from eddies or from the effect of obstacles in driving the wind into a funnel, are almost wholly unstudied, we cannot but think that it is possible to overrate their importance. Against the whirlwind or cyclone, when it assumes such a force as to lift a wagon and horses from the ground, it is clear that no strength within the limits of ordinary human practice can ever be provided.

On the other hand the specific weight of the atmosphere, which is the first element in the problem of wind-pressure, is well known. The pressure of a fluid striking a plane perpendicularly, and then escaping at right angles to its original path, is known. That being the case, there can be no question as to the general formula, which, apart from all manner of local disturbances, connects the speed of a great wind-wave with its pressure. And now that we are taught not only to look at the width, but at the depth of the wave, and to assign to each successive altitude its due increment of pressure above that stated on the ground surface, or at the normal height of 15 ft. above that surface,—by the addition of the factor of safety we consider that the danger arising from the local intensification of portions of the general wave may be adequately met,—the problem assumes a very definite practical form.

We shall be glad to receive any corrections, if such should prove needful, of the table which we present to our readers. Meanwhile we confess that the study, of which the above columns are the outcome, has given considerable relief to our own anxiety. That the architect has a more formidable enemy with whom to reckon than we have been accustomed to think, we fully admit; but the first thing is to know the exact force of that enemy, and as to that we venture to hope that by the co-ordination of the valuable work done by Mr. Hawksley and by Mr. Thomas Stevenson, we have contributed something that may be of permanent service to the profession.

THE SUBSTITUTION OF BUILDING FOR MONOLITHIC WORK:

AS INDICATED IN THE EARLIEST BOOKS OF THE HEBREW SCRIPTURES.

IN a recent article on the Tombs of the Giants (vol. xlii., p. 693) we suggested the idea that "the account of the iconoclastic reform under Hezekiah (2 Chron. xxxi. 1), when the holy places and the pillars were destroyed, unmistakably indicates the destruction of the two classes of structures known as the dolmens and the menhirs." Drawing the same inference as the above from the recent discoveries of rude stone monuments in Western Syria, the July quarterly statement of the Palestine Exploration Fund opens with a paper on the rude stone monuments of the Bible. We shall not attempt a complete abstract of a paper which is to some extent exhaustive of the inquiry, so far as reference to the Sacred text is concerned. But it may interest many of our readers to be told of some of the most definite references, in the Pentateuch and the other books of the Old Testament, to the holy places of a worship more ancient than the Law of Moses. And from the inquiry emerges a wholly unexpected light as to the religious character, if not as to the exact date, of the substitution of building proper for uncemented megalithic work.

The earliest reference to a rude stone monument cited in this interesting article is one to which we referred in our own pages (Gen. xxviii. 11). This is directly described as a makôm, or holy place, where Jacob erects, and pours oil upon a metzebah, or menhir. Captain Conder suggests the identity of the spot with that where Abraham "builded an altar to the Lord" (Gen. xii. 8); and we may add that the difference of spelling in the two words translated altar and pillar, which is only the substitution of the ע for the צ, is one of those of which the Aramaic tongues present such frequent examples as to lead to the idea that local dialects, subsequently fused into a homogeneous speech (as in the case of sibboleth and shibboleth), were the original causes of the presence of several of quasi-duplicate letters in the Hebrew alphabet. This takes us back to the date 2175 B.C. Comparing verses 7 and 8, it seems that Abraham built two altars, the first at the makôm of Sichem, which is probably on Mount Gerizim, and the second in the vicinity of Bethel, or, more properly, Beth Elohim. About 175 years after the erection of the first altar by Abraham, Jacob (Gen. xxxiii. 20) appears to have erected, or perhaps reconsecrated, an altar on the original site near Shechem; and it is to be noted in this verse that the verb is spelt with the ע, and the noun with the צ. Before this we have the account of the erection of a stone as a metzebah by Jacob, at the place subsequently known as Mizpah; and the accompanying ceremonial, not only of the foundation of a cairn, but of a feast, probably a sacrificial feast, on the top of the cairn (Gen. xxxi. 45, 46). Again we find the same patriarch (Gen. xxxv. 7) revisiting the makôm of Beth-el, and erecting or re-erecting the altar; and a little after (verse 14), either in the same spot, or not far from it, we find him venerating a monolithic altar (the word metzebah is repeated, with the addition, eben), at the makôm of the debir, or wood, and both pouring a libation, and pouring (the verbs employed differ as well as the nouns) oil or fat upon it. Here we have an instance illustrating the use of the cup-shaped hollow in the menhirs, as well as one, as far as we are at present informed, unique, of the festal consecration of a cairn. The erection of a pillar at the grave of Rachel would not in itself be very instructive, but is of interest if regarded in connexion with the other instances cited.

Another class of references consists of those which seem to indicate the erection of megalithic circles. Among these are cited the altar and

the twelve menhirs, erected by Moses at Mount Sinai (Exodus xxiv. 4), where the two forms of the word occur in the same verse. The first with the ו, and the second with the י. Erecting stones, which are here first mentioned as being built with lime (שִׂיד), that is to say, set in mortar, and the erection of an altar which is distinctly spoken of as constructed of stones, in the plural, together with the prohibition to which we before referred (vol. xlii., p. 694), to cut or hollow these stones, appear to denote a wholly different phase of religious rite. The monolith has disappeared in this passage, whether as a menhir or as an element of a circle. It cannot for a moment be supposed that the change of language is unintentional, or, at least, that it is not highly significant. None the less so because, forty years later than the visit to Sinai (Joshua iv. 9), we find the single stones again used, and erected as a circle. We may observe that it is gratuitous to suppose that the stones here mentioned were no larger than a man could carry, in which case their permanence as a memorial would have been precarious. The twelve men selected by Joshua as representatives of the tribes may without impropriety be regarded as each the head of a working party, strong enough to transport stones adequate for the purpose of a monument.

For any further references, and they are many, to the erection of altars, we refer our readers to the number of the Palestine Exploration Fund's quarterly statement which we have cited, or to the sacred volume itself. The great stone mentioned in the field of Joshua the Bethshemite was apparently an ancient sacred monolith; and the stone Ezel (1 Samuel xx. 19) would appear from its name to have been a gigantic boulder, perhaps something like the "big stone" at the village of Northfield, near Birmingham, which gives its name to the rustic inn. The erection of the "Stone of help," Ebenezer, by Samuel (1 Samuel vii. 12), is, however, connected with the offering of a sacrifice.

It is, we think, undeniable that we find in the above passages references to a change in rite or worship. How early the first erection of the monoliths may be, can, of course, be only approximately illustrated by these passages. But we find the custom of erecting, venerating, and pouring libations on single stones, in connexion with makôms, or holy places, practised by Abraham and by Jacob, and we find instances of a not wholly unlike nature in the cases of Joshua and of Samuel. At the same time, in the Book of Deuteronomy we find the opposite form of building with mortar, for the sake of monumental durability, and the use of an altar, not of a single stone, but of stones; while the injunction to build a metzebah adameh, an altar of earth (Exodus xx. 24), is of the same date as the Decalogue, although the permission to rear an altar of unhewn stones (the plural is used in the Hebrew, though not in the A.V.) is appended. As to the metzebah built by Noah it may be inferred from the verb used, translated built, that it was of stones in the plural, and not a monolith. As to these delicate critical indications, however, it must be borne in mind that they may perhaps rather point to the date at which the several books of the Hebrew text assumed the present exact form than to any other note of time. When monolithic altars were in use, a writer would speak of rearing them, and when they had been displaced by altars of fitted stones, he would speak of building them, in the natural use of the words, used without any thought of the weight which might thereafter be held to attach to the one or the other verb.

It seems, however, clear that the intent of the Decalogue and of the accompaning injunctions was to prohibit the use of the monolithic altar, and that in express terms when it had been hollowed for the reception of the libations, whether of oil, of wine, or of blood, of a more ancient worship. This is in strict accordance with the injunctions in the treatise Avoda Zara of the Mishna as to matters that have been connected with idolatry. The recent discoveries in Moab have thrown a wholly unexpected light on the subject; and it is probable that we can as yet only dimly anticipate the effect that these discoveries may produce on our archæological theories, if not on the exegesis of the Hebrew Scriptures.

Building in Winnipeg.—It is reported that 5,000,000 dols. will be spent in Winnipeg this year in building.

THE ART OF THE ARABS.

It is a strange contrast that offered at this moment when our guns are thundering in Egypt,—the use of the most recent applications of modern science in the invasion of a country whose civilisation our archæologists have shown us is the oldest in the world, the parent stock from which has been developed through long generations all that we are most proud of. If it is the land of the Pharaohs that our troops have, for the second time within a century, invaded, it is scarcely of them and their times that we think now. There are those,—and, indeed, with all it is to some extent inevitable,—to whom at this moment the interest of the country we are now occupying is centred in its connexion with the great oppressors of the Israelites and their even earlier predecessors. But it is not solely their wonder-shrouded civilisation and its creations that are most threatened by the recent course of events; it is not alone the monuments of a nation which was antique and already on the decline at the hour that Abraham came forth, when the empires of Chaldea and Assyria loom up confusedly, and whose cities at the moment we commence to trace in the patriarchal life of the Bible the first formation of human society, were hoary with the centuries of their existence; it is not the monuments of those distant generations that are threatened; they have stood the brunt of time and wars age after age,—it is the more fragile creations of an art nearer our own time, more within the ken of our every-day existence.

The Egypt of to-day, if to the antiquary it is still the land of the Pharaohs, if he can still trace the resemblance of the race to the silent pictures drawn thousands of years ago on the walls of many a tomb, the land, it must not be forgotten, is in the hands of the Arabs. They it is whose civilisation has now for centuries imbued the country over which once ruled the Pharaohs. The chief artistic interest roused in Egypt has been allowed to centre exclusively round the contemporaries of the mysterious mummies which fill our museums. The course of history has given to the land of the Nile other claims to the interest of artists and archæologists besides those connected with pyramids and obelisks, sphinxes and sarcophagi, incised wall decorations, and papyri. The place held by Egypt in the history of the development of our art and civilisation has, thanks to the researches of successive toilers, since the commencement of the present century, become comparatively familiar. Greece has ceased to be regarded,—except in our educational system,—as the point of departure of our modern civilisation; the Egypt of the Israelites, so long wrapt in profound mystery, has been brought before us. Research, historic and romantic, has revealed to the artistic and literary world the Egypt of the Greeks and Romans; but in the generations that were to follow, the land of the Nile was to pass through another great and influential crisis, and, with the Mussulman or Arab conquest of the seventh century, was again to be the centre of a great artistic and civilising movement. "The first century of the Hegira," says Fergusson, "forms a chapter in the history of mankind as startling from the brilliancy of its events as it is astonishing from the permanence of its results." It is a period not so familiar, but which possesses marked interest from the direct influence its art and learning exercised on Western Europe.

It is only within the present century, as Viollet-le-Duc has remarked, that the attention of the artistic world has been directed to the various expressions of Oriental art; our conception of its creations is still inextricably connected with vague poetic visions of the Alhambra and the French colony of Algeria. M. Coste, for many years architect to the Viceroy of Egypt, was perhaps the first to study in any adequate manner the remarkable architectural marvels which the Arabs had erected in Egypt.* But M. Coste, however patient and accurate in his professional studies, may be said to have been only a pioneer on the road. The familiar studies of Owen Jones, and more recently of M. Bourgoin, are both of a more purely technical than archæological interest, but more information may be gathered from Girault de Prangey's works on Arab architecture.†

In the seventh century, Egyptian difficulties, as at the present moment, would appear to have been somewhat complicated with religious questions, for the Arabs were called in by the persecuted dissenters from the Greek Church to aid them against their more uncompromising orthodox brethren. The step was a rash one. In vain the Greek governor, Makaukas, held the field during a month; although at the head of 100,000 men, he found himself forced to treat with the invaders. "By the Almighty (replied the governor in answer to an indignant letter from the Byzantine Cæsar) how few they be, these Arabs are stronger and more powerful than we with our multitude. One man among them is worth as much as a hundred of ours, for they seek death, which is dearer to them than life." In 641 Alexandria capitulated, the Arab commander, Amr, razing the walls. The fall of Alexandria,—as Washington Irving says, in his "Life of Mahomet,"—decided the fate of Egypt. From this date, Arab art and civilisation were to flourish by the banks of the Nile.

It is difficult for us in the present day to conceive the vitality and brilliancy of this Arab civilisation when we see its existing state of collapse. In the field of literature and art the Arab world rose to a splendour which is only the more surprising as it is contemporary with the period in which Europe was still struggling in the twilight of the Middle Ages. It is impossible to imagine these conquerors from Arabia the simple wild horsemen of to-day. It has not unaptly been suggested that some undiscovered civilisation must have existed among them. In Arabia there have been found the ruins of antique monuments which the present inhabitants attribute to an epoch anterior to Mahometanism. But this is a question resting on data too vague to even approach. More mysteries than this lie in the strange rise and course of both Arab art and Arab literature; a mystery lies in many points of the double and parallel development of Mussulman and Christian art, both of which possesses many decorative symbols in common. Which borrowed from the other? We are perfectly aware that the Arabs laid the Byzantine arts heavily under contribution; they were Greek architects, painters, goldsmiths, enamellers, weavers, and embroiderers whom they employed. They borrowed also again, from the Persians, who had been the pupils of the Greeks since the time of Alexander the Great, and who, even when the national dynasty of the Arsacides and the Sassanides shook off the political yoke of their conquerors, remained under the artistic influence and were half Byzantine. The Christian art of Byzantium itself was the outcome of the disaggregated relics of the earlier arts of Assyria, Egypt, Phœnicia, and Greece, as well as the composite variations which prevailed in each of the different provinces of Asia Minor. Christian art appropriated to its use a portion of the symbols of which Pagan art had made use; it continued in a modified manner its forms and its ornamental dispositions, giving more preponderance to such features as best corresponded to its own peculiar symbolical exigencies. Arab artists acted in the same manner with respect to Christian and Persian art. Its cupolas, its arcades, its columns, Arab art appropriated to its own use. All along the line of conquest it gathered what it found in each country in which it settled, being strongly influenced by the artistic traditions of that country.

Thus the geometric ornamentation which constitutes so essentially the character of Arab art, it would be very rash to speak of as peculiar alone to its creations. Such forms are to be met with in the oldest monuments in the East, in India, in Syria, in Asia Minor, long before the appearance of the Arabs.

M. Viollet-le-Duc has urged that the term "Arab art" is open to question; historically speaking, it is very vague. We have determined, it is true, to give this name,—varied by the synonym of Saracenic,—to the art scattered over those countries conquered by the followers of Mahomet from Asia to Spain, and hence the expression is thoroughly accepted.

The moment of the Arabs' appearance on the scene in the seventh century was one of sad decline in the arts. The constructive secrets of architecture were, in many cases, almost lost;

* Coste, P.: "Architecture Arabe; ou Monuments du Kaire." Measured and drawn from 1817 to 1826. Paris, folio, 1837-39.

† Bourgoin: "Les Arts Arabes." Paris, 1873. Folio; and the same author's "Elements de l'Arte Arabe." Paris, 1879-80. G. de Prangey: "Monuments Arabes d'Egypte," measured in 1845. Paris, 1846. More recently Georg Ebers, in his "Ægypten in Bild und Wort," has given some interesting information relating to the Arab conquest of Egypt (Leipzig, 1879). An English translation of Ebers's work is now in course of publication.

the Arabs possessed even less acquaintance with the traditions of the past. Their Greek and Persian architects found it either easier, perhaps through the ignorance of their workmen, to imitate, and especially to rob wholesale, the Romano-Christian or Romano-Persian monuments. They often used no columns, cornices, or friezes, but what they pillaged from some existing Classic work. New symbolic necessities, however, soon gave new and original dispositions to the simplest and most rudimentary artistic elements. Here lay the true Arab genius,—the power of eternally repeating in an embroidery of decoration the same line, just as in their music we find the incessant repetition of the same rhythm.

It is a statement constantly repeated, and generally accepted, that the Arab's religion forbade the representation of any living thing, man or animal. The question cannot be said to have been satisfactorily settled. It would certainly seem that, in their religious edifices, such representations were proscribed, but only after a certain date. Of the two great sects into which Mussulmans are divided, that of the Sunnites is entirely opposed to images, whilst that of the Shyites admits them. In Persia this latter sect prevails, and there its exigencies satisfied demands established by the traditions of a brilliant past civilisation.

We will pursue these observations hereafter.

EPPING FOREST.

A RETROSPECT AND A PROSPECT.

The battle which, for something like four years, the Corporation of the City of London has been waging on behalf of the people in obtaining the preservation of Epping Forest for their perpetual use and enjoyment, was brought to a peaceful and satisfactory close on the 24th day of July last, at the offices of the arbitrators, when the final award was signed. The City Solicitor, in referring to what may be called the legal history of the forest, said, "Under the orders of the arbitrator, the conservators of Epping Forest have purchased 1,842 acres and 23 perches. The Corporation of London had previously purchased 3,554 a. 2 r. 34 p.; and to this I have to add 134 a., the balance of exchanges, making a grand total of 5,530 a. 3 r. 17p. at an expenditure of 256,275*l*., which in all probability will be slightly increased before the figures are finally closed."

The story that the heights and hollows of Epping Forest have to tell goes far back into the pre-historic eras. There was a time when the rhinoceros and hippopotamus rolled and swam in the muddy lagoons of the Roding and the Lea; when the elk and bison ruminated in the groves of High Beech, and the elephant and his big brother, the mammoth, reigned supreme over the wildernesses of Essex. Even at this present day, elephant-hunting is far from uncommon among the geological preserves in and around the Forest. The late Sir Antonio Brady collected many spoils of the chase, among these the teeth and jaws of mammoths of every size and age, the largest tooth measuring 10 in. in length. Geology was a science unknown to the learned Camden, who, in his "Britannia" (1610), discoursing of Essex county, quotes Ralph, the Monk of Coggeshall: "In King Richard's time were found two teeth of a certain giant of such a huge bigness that 200 such teeth as men have now-a-days might be cut out of them. These I saw (quoth Ralph) not without wondering!" Camden was sceptical, and hinted at whales; but Norden, in his "Description of Essex" (1549), writes as having seen the marvellous molars and believing in them.

There are also to be found in the Forest marked indications of the existence of man in those remote ages. Flakes, fresh as when first struck off from the flint blocks, are far from infrequent. Three superb, wholly polished celts were found last February during draining operations in the vicinity of Leyton, close to where for so many years Sir A. Brady had disinterred the bones of the mammoths.

To come nearer to historic times, Mr. B. H. Cowper, wandering one summer day in 1872 among the glades in the neighbourhood of Loughton village, came upon certain remains which seemed unquestionably to form part of an ancient earthwork, with an outer ditch or moat, and an inner embankment. The very oldest inhabitant was at fault. Nobody had ever heard of, far less seen, this relic of bygone times. In 1875 the ground was carefully surveyed by Mr. D'Oyley, of Loughton; but up to the present time neither coin nor weapon nor implement of husbandry, not even a potsherd nor a human bone, has been met with to tell when or by whom the earthwork was raised. From these mysterious mounds to Ambresbury Banks,—another ancient earthwork in the Forest,—is a pleasant walk of two miles through dingle and dell. It has been generally assumed to be a British work, though such works are not usually rectangular, as it is. On the 30th May, 1881, the Epping Forest Field Club, having obtained the permission of the Forest Committee of the Corporation, commenced to cut sections through Ambresbury Banks. The excavations occupied nine days, and were carefully watched by members of the Club. Many small fragments of pottery were found which "might be British," some which "might be Romano-British," and a fragment of a rim, hand-made, which "must be British." But these "finds" had no story to tell. We know that London, at the landing of Cæsar, was surrounded almost up to the walls by dense forests, and Ambresbury Banks,—so sayeth one legend,—was the "fortress in the woods" of Boadicea; while another claims it as the last stronghold of the Roman general Cassivelaunus.

In the year 896 the light of history first throws a gleam upon the Forest, when the Lea was much deeper and broader than now, and when the Danes sailed up it in their war-ships to Ware, and Saxon Alfred raised two fortresses to impede their return, one near High Beech and one in the vicinity of Broxbourne. As we approach the era of the Norman invasion definite mention is made of Waltham,—the home in the weald,—which dates its origin from the days of Tofig, a Dane, at whose wedding feast at Clapham, Hardicanute, "all fordronken," fell down with the wine-cup in his hand and died. Tofig being a mighty hunter, built a lodge where Waltham town now stands, "the place having plenty of wild deer." Edward the Confessor had a hunting-seat "built of stone and leaded," called the Bower, at another part of the forest, now known as Havering-atte Bower. He loved the spot much, because it afforded him solitude for his devotions, until they were disturbed by the singing of the nightingales. Camden writes:—"I cannot justify that report how he was hindered and troubled in his praying by the multitude of singing nightingales, earnestly desired of God their absence. Since which time never nightingale was heard to sing in the park." To Waltham Forest down to the days of James I. came all the kings of England who loved to chase the "beasts of venery."

> "The first of them is the hart, the second is the hare;
> One of them is the boar. The wolf, and not any more,"

rhymes the "Book of St. Albans," written, it is said, by Dame Juliana Berners, born within the borders of the Forest. The abbots of Waltham were renowned for their splendid hospitality, of which Henry III., in his hunting expeditions, used to take a mean advantage, by claiming food and lodging at their manor-house for himself and family without remuneration, whenever,—and that was often,—he was hunting in the neighbourhood. At the invitation of Edward IV., the mayor, corporation, and leading citizens, accompanied by their ladies and dames, and all in gallant array, used to hunt with the king in his forest of Waltham, and when the chase was done the company rode back to London, and made merry in the Drapers' Hall. Chingford was the favourite resort of Queen Elizabeth. It included two manors, one which belonged to St. Paul's Cathedral from the time of the Confessor until its enforced surrender to Henry VIII. The church of Chingford (St. Paul's) is now disused. "The present building" (*Gentleman's Magazine*, 1796) "seems not very ancient, not more so than about the time of Henry VII. The whole has been put into a state of very sound repair, so as to appear almost *unalterable, even to time itself.*" Alas! for the vanity of human prophecy, the venerable church has been tumbling down piecemeal for many years; its brasses have been stolen, and only a few of its old monuments remain in the chancel. At last the roof of the nave fell in, and total ruin seemed inevitable, but its picturesqueness saved it, and it was restored in 1873. At the foot of the hill on which it stands is the manor-house, now a farm-house. The other manor, Chingford Earls, at the compilation of Domesday Book, was held by Orgar the Thane. Each manor included meadow and forest land, with pannage for 1,000 hogs. The manor-house of Chingford Earls was the building now known as Queen Elizabeth's Lodge, in which the manorial and forest courts were wont to be held. It is a tall, irregular, half-timbered structure, with gabled ends and high-pitched roofs. "The staircase built out from the house," writes Thorne in his "Environs," "is of large proportions, with massive timbers; the stairs, of solid oak, about 6 ft. wide, are in fours, there being to the twenty-four steps six broad landings." The story goes that when the Virgin Queen visited the lodge, she used to ride upstairs to the great chamber on the second floor. Elizabeth paid at least one visit to Loughton Hall, on the eastern side of the Forest, as also did James I. and Queen Anne when a princess. All that is left to tell of the bygone glory of the hall, which was burned down nearly fifty years ago, are its great hand-wrought iron gates, the avenue that leads from the garden door to the chancel, the few remains of the old church, and the tombs of the lords of the manor in the desolate churchyard. One of the most striking features of the Forest district is High Beech Hill, from which can be seen Waltham Abbey and the windings of the Lea, the woods of Hertford, the uplands of Cambridge, the hills of Kent and Surrey, and the heights of London. While residing at Beech Hill House Tennyson wrote the "Talking Oak":—

> "Once more the gate behind me falls,
> Once more before my face,
> I see the mould'ring abbey wall
> That stands within the chace,
> Beyond the lodge the city lies
> Beneath its drift of smoke."

In 1837 John Clare, the Northampton poet, was placed in the private asylum of Dr. Allen, at Fairmead, High Beech, one of the early reformers of the treatment of the insane. From this place he escaped in 1841, and reached Peterborough, after being four days and three nights on the road, in a penniless condition. In his "Asylum Poems" he writes:—

> "I love the forest and its airy bounds,
> Where friendly Campbell takes his daily rounds."

A favourite walk along with friendly Campbell,—son of Campbell the poet,—was "Buckett's (Buckhurst) Hill, a place of furze and clouds," and boasting of an ancient hostelry,—the Roebuck,—in front of which the stag was uncarted on each returning Easter Monday. Upwards of 160 years ago Tom D'Urfey satirised the Epping Hunt,—

> "Once a year into Essex a-hunting they go,
> To see 'em pass along O! it is a pretty show,
> Through Cheapside and through Fenchurch-street,
> And so to Aldgate Pump," &c.

In the early part of the present century it was not uncommon to see 200 men in pink following the hounds through the Forest, and "there was as great a show as their used to be at Epsom races." The Epping Hunt has long been doomed to oblivion. In 1827 Tom Hood introduced his verses on the Epping Hunt thus:—"The author of the following pages has endeavoured to record a yearly revel, already fast hastening to decay. The Easter chase will soon be numbered with the pastimes of past times. Its dogs will have had their day, and its deer will be fallow. A few more seasons and this City Common Hunt will become uncommon." It has virtually ceased to be, and it was full time it should, when the "roughs" installed themselves as the patrons, and mounted police inspectors in blue took the place of the men in pink. The meeting-place of the sham hunts of late years has been the King's Oak inn, on the east side of High Beech Hill. The name, according to tradition, was derived from an oak planted there by Harold when on his way from Waltham to the fatal field of Hastings. Here, on the 6th day of May, 1882, Queen Victoria planted a sapling oak, and spoke the few but memorable words, "It gives me great satisfaction to dedicate this beautiful forest to the enjoyment of the people for ever." One of the latest acts of the Corporation in connexion with the Forest was the purchase of Wanstead Park for 8,000*l*. Wanstead Manor was the gift of Ælfric to the monks of Westminster, and passing through many hands is now the property of the people. The original manor-house was demolished and rebuilt about the middle of the sixteenth century. Here, for many days, the Earl of Leicester entertained Queen Elizabeth, and Sir Philip Sidney wrote a masque, "The Lady of May," for the occasion, commencing, "Her Most Excellent Majesty walking in Wanstead Garden, as she passed down into the Grove, there came suddenly among the train

one apparelled like an honest man's wife of the country, where, crying out for justice and desiring all the lords and gentlemen to speak a good word for her, she was brought into the presence of Her Majesty." After this stage direction, of a sort, the masque commences, on the merits of which the queen is asked to decide:—

"Judge you, to whom all beauty's force is lent;
Judge you of love, to whom all love is bent."

In this present year of great book and picture auctions, it may be interesting to know that in the inventory taken of the contents of the house at the earl's death, three portraits of Henry VIII., others of Queen Mary and Queen Elizabeth, forty-three pictures in all, were valued at 11*l.* 13s. 4d., and the entire library, which consisted of an old bible, Foxe's "Acts and Monuments," much worn, seven psalters, and a service-book, at 13s. 8d. In 1665 Pepys "took coach to Wanstead, the house where Sir H. Mildmay died, and now Sir Robert Brookes lives . . . . a fine seat but an old-fashioned house." In two years afterwards the house came into the possession of Sir Josiah Child. In 1683, John Evelyn went to see the new proprietor's "prodigious cost in planting walnut-trees, and making fish-ponds many miles in circuit," &c. The house was taken down and rebuilt in 1715, the architect being Colin Campbell.* Defoe visited it soon after it was finished,—"It is all of Portland stone in the front, which gives it a most magnificent effect at a distance. As the fore-front of the house looks through a long row of trees, so the back-front respects the gardens, from which you fall down an easy descent which lands you upon the terrace, and gives a most beautiful prospect to the river, which is all formed into canals and openings to answer the views from above. . . . I have not room to say half what might be said of this truly noble palace." The unthrift of the last possessor brought the contents of Wanstead House to the auction stand: 41,100*l.* was the result of a thirty-two days' sale in 1822. No purchaser having been found for the house, it was pulled down and sold piecemeal, and the fine old trees were cut down; but the ornamental waters, the grotto, and some of the avenues still remain for the delectation of their many-million proprietors.

From the year 1549 to 1882 is a long wait. On the 23rd of July, in the first-mentioned year, a book was made and sent to the commons (people) of all the realm "because of their rising and pulling down of inclosures, the which was sometime (formerly) commons unto the poor men, and great men took them in and enclosed it to them and made parks in divers places, and as this time the commons (people) have risen and pulled up hedges and palings, this book was sent to them that they should be content gently, and within a short space it should be mended." In four days after this proclamation there was hanged one (of the "risers") that came from Romford, on a gibbet at the well within Aldgate. This Romford man doubtless projected the freedom of Epping Forest. Willingale, his successor after the lapse of 300 years, in fence-breaking, lived to see the Forest free, and "was one of those," in the language of the City Solicitor, "of whom it will be recorded that they had well served their country and the State."

We, in imagination, aided by the earliest of English guide-books, start on a trip to Epping Forest on a bright morning of August, 1720. We make our way through the crowds that are thronging to the markets round the Leaden-Hall, who are arrested in their progress for a few minutes to permit a covered wagon to pass from an archway into the street. "The carrier of Epping, in Essex, do lodge at the Prince his Arms, in Leadenhall-street. He cometh on Thursdays and departeth on Mondays." We secure our seat, and are favoured with the company of a well-informed gentleman of about sixty years of age, who tells us he is setting out on a Tour through the islands of Great Britain. As our wagon slowly rolls through Aldgate, we bid farewell to "the City's love and charity" that are beginning to show how stony they are now that the gilding begins to wear off. Over against the end of Houndsditch my companion, a True-born Englishman, has a good word to say of the plum-pudding of the Pye Tavern and the punch of the Three Nuns. He knew them well, for he lived in the time of the Plague without Aldgate, about midway between Aldgate Church and Whitechapel Bars. Talking about the Plague, we pass through Mile-end-green and enter the village of Bow, where a large manufactory of porcelain is carried on, which, my companion said, though not so fine as some made at Chelsea or Dresden, is much stronger. Crossing Bow Bridge we came to the village of Stratford, which is greatly increased of late years, and my companion pointed out the fine seats, most of them built by citizens of London, who drove to town in their own carriages, that bespangled the western part of the Forest. On we went between great fields of potatoes until we came to the Green Man at Leytonstone, which had formerly been a lodge on the edge of the Forest, where we halted to bait, and then went on underneath the shadows of the trees through Woodford and Loughton, and late in the evening entered Epping and put up at the Old Lion. The landlord informed us that in his father's time Secretary Pepys had lodged there, and "had some red herrings to breakfast, while his boot-heel was a-mending, by the same token the boy left the hole as big as it was before"; then he and his company "to horse for London through the Forest, where they found the way good, but only in one path, which they kept as if they had rode through a kennel all the way." But here our imaginary trip ends, our daydream is dispelled by the shriek of the locomotive that has sped us and an army of holiday-makers in a few minutes from the heart of the City into that of the greenwood where the sun is shining, and the birds are singing a welcome to the thousands of toilers from under the City's "drift of smoke." Here we cannot do better than quote Mr. Robert Hunter, honorary solicitor to the Commons Preservation Society,—"The favourite parts of Epping Forest are, indeed, crowded on the great holidays to an extent which would certainly prevent us from classing them amongst Nature's solitudes. The vans, the drinking, the donkey-riding, and the swings are mere accidents which will disappear or assume their proper position as education and refinement spread." So let the thousands wander at their own sweet will through the groves where centuries ago the brother of Gurth drove the hogs to the acorns, and Wamba's cousin cracked rude jests, and the twang of the bowstring of some friend of Locksley sent a terror to the breasts of the fat friars of Waltham, and death to the heart of the high-deer, until the shadows of night begin to gather, and the nightingales, despite the malison of the Saxon king, fill the darkening glades with song.

* A native of Scotland. Appointed architect to Prince of Wales 1725, and surveyor of the works of Greenwich Hospital 1726.

THE CARLISLE MEETING OF THE ARCHÆOLOGICAL INSTITUTE.

The members of the Royal Archæological Institute, the commencement of whose proceedings in Carlisle we mentioned last week, appear to have had a very interesting and successful meeting. This is the second time that the Institute has visited Carlisle, its first visit to the border city having been made twenty-three years ago. The success of the present meeting is in no small degree due to the mayor, Mr. R. S. Ferguson, F.S.A., who has been able to render assistance not always to be looked for at the hands of municipal dignitaries. Fine weather has also conduced (as it always does on such occasions) to the success of the meeting.

In the address of welcome which was presented on behalf of the corporation, it was pointed out out that since the former meeting in 1859, considerable changes have taken place in the city, mainly in connexion with the great extension and development of the railway system, but also in the opening out of new streets and the erection of new buildings. In the progress of these works many interesting antiquarian discoveries have been made, by which additional light has been thrown on the history of the past and generally an increased interest has been awakened in all matters connected with antiquarian and archæological research.

The Mayor, after handing the address to the President of the Institute, said,—It was not my intention to have said anything upon this occasion, but I have a little story to tell you which comes so *apropos* that I cannot omit it. For some years it has been known to us who dabble in the muniments of this city that one of our books, and a very valuable book too, known as Order Book B, had been missing out of our records, and any inquiries that we could make gave us no particulars of where this missing book was. That missing book has, within the last hour, been restored to the Corporation. Its being restored is the result of the general rake-up for curiosities that was made for the occasion of the visit of this society. The book was in the hands of a gentleman who has held on more than one occasion the office which I now hold. It had been given to him some two years ago, and I think he had never looked into it until he was considering what he could send to the museum. He then found that he had in his possession this book, which is of the very greatest value to the Corporation in more ways than one; and I am happy to say that by the restoration of that book the Corporation of Carlisle possess a complete series of muniments from the date of the governing charter of Charles I. The series is now unbroken. We had long given up hopes of finding it; and it is a fortunate circumstance, and one we owe to the visit of the Archæological Institute, that we can to-day say that our records are complete.

Mr. Robert Ferguson, M.P., said that as he happened to be mayor of the city on the occasion of the former visit of the Institute, he had great pleasure in joining in the welcome on the present occasion.

Lord Talbot de Malahide, President of the Institute, having briefly replied,

The Rev. Canon Simpson, Vicar of Kirkby Stephen, read an address of welcome from the Cumberland and Westmoreland Archæological Society, in which it was stated that the former visit of the Institute was one of the chief causes of the formation of the local society.

After a few words of welcome from the High Sheriff of the County (Mr. George Routledge),

The President of the meeting (the Right Rev. the Bishop of Carlisle) delivered an interesting opening address, in the course of which, dealing with local antiquities, he said,—It is impossible to pass from village to village in Cumberland without having the condition of things during the days of border warfare brought home very clearly to the imagination. It is not so much the existence of houses of defence like Rose Castle and Naworth, and the fact that almost every house of any magnitude contains its ancient tower, or peel, though now frequently disguised by modern improvements,—not this so much as the fortress churches, which bring back vividly the pugnacious and unsettled condition of the country a few centuries ago. Such churches as those of Great Salkeld, of Dearham, of Newton Arlosh, of Burgh-by-Sands, tell a strange archæological tale. Perhaps in some respects the church of Burgh-by-Sands is the most interesting of those which I have mentioned. I may add that the tale which this curious church tells is rendered more, rather than less, clear by a recent careful restoration. There you have the tower with its impregnable walls, the iron gate between it and the nave, the north aisle with its windows high above the ground, and with a western entrance commanded by an aperture in the impregnable tower, through which a small gun within the tower would pour forth its contents, if necessary, upon an attacking party with great comfort and sense of security to those who manned it. Altogether these fortified churches tell a strange and interesting tale. One of the grounds upon which Henry VIII. was petitioned to spare the Abbey church of Holme Cultram was that it was the only place of defence of the inhabitants against the marauding Scots. But the interest which is connected with monuments of border warfare and records of early English and Mediæval history appears to me almost to vanish by comparison with that which attaches to the relics of the Roman occupation.

Referring to archæology in its bearings on architecture, his lordship said,—Architecture without archæology is manifestly mere confusion. There is plenty of knowledge, of course, which still remains the property of the architectural expert; but the larger number of educated persons, on going into a building like our cathedral, feel themselves at home with the different styles of arches and windows that it contains; they will not grossly confound one date with another, they will see at a glance the rough history of the building, and so far forth they will prove the existence in their minds of archæological knowledge. May I give an amusing instance to show that in this respect improvement has been made in recent years? In the course of your visit to Carlisle, you will

doubtless see the Fratry. The recent restoration has brought into prominence the pulpit, in which in olden days the reader stood for the edification of the brethren at their meals. It would be difficult now to mistake the purpose of the pulpit; but till lately it was popularly known as "the Confessional," and in order to carry out this view, the artist who has drawn the pulpit for "Billings's Illustrations of Carlisle Cathedral," has represented a woman kneeling on the floor below! . . . . I will conclude my archæological remarks with one or two reflections extracted from a stone. The stone shall be one in the walls of the Church of Burgh-by-Sands, to which I have already incidentally referred. It is a stone which has apparently been in its present place for many centuries, and must have looked much as it does now when King Edward I. was here, and when he died hard by. Plenty of rough work in the way of border warfare that stone has seen. But there are certain marks upon it which open up another chapter in its history; experts will tell you that it is a Roman stone, and a very little experience will enable any ordinary eye to detect this fact. The stone then has been taken, like many others which you may single out here and there, from the old Roman station, the existence of which the name of Burgh attests; and so we see that when our stone looked upon Edward I., or when Edward I. looked upon it, it was already an antiquity of respectable standing; it had then been quarried, say, 1,000 years, and had witnessed many and strange vicissitudes of men and things. But if we trace the stone further still, and consider how it came to be in the quarry from which it was taken by the hands of the Roman soldier or quarryman, we shall find perhaps that it was formed from pre-existent materials belonging to a condition of the world not one thousand, but a thousand thousand years previous: and so we have archæology beyond archæology, and archæology beyond that: our stone tells us not merely of Mediæval history, nor even of Roman residence in Britain, but it bears in its structure evidence of formations and transformations going on under the influence of the powers of nature in the dim distance of the mysterious past. All things are comparative, and the portion of history with which archæologists are concerned is an almost inappreciable moment in the life of this stone. Under the influence of such a contemplation archæologists may well feel that after all they belong to the present more than to the past.

The proceedings of the inaugural meeting concluded, a large number of the members took part in a perambulation of the city. When the party had assembled, the Mayor ascended the steps of the Market Cross (which dates from 1682) and pointed out the townhall and picturesque guildhall, which looks over the green market, formerly used as a bull ring. He explained that the guildhall is an Edwardian building, held of the corporation by cullery tenure, and that each of the ancient guilds have a room in it. These guilds are formed by the merchants, butchers, shoemakers, tanners, skinners, and glovers, smiths, weavers, and tailors. Leaving the market-place, the members wended their way to Carlisle Castle. A halt was first made on the edge of the moat, now dry, which runs across the south front of the building, and the Mayor, who as the leader of the party was received by Colonel Watson and other officers of the garrison, proceeded to explain the situation of the ancient fortress, which occupies a strong position on a bluff or headland of red sandstone, rising to a height of some 60 ft. above the level of the river Eden, and must have been a place of considerable importance in the time of the Romans. He pointed out how the castle had been connected with the walls of the city, and showed where at one time, outside the castle walls, a noble row of ash-trees had been planted, forming an avenue leading to what was once the Castle Orchards, from near the entrance of a part which had acquired some fame as Queen Mary's Tower, but which, he observed, an economical Government went to the trouble of sweeping away, and did not even go to the expense of making a plan. They had also cut down the ash-trees, which were some of the finest in the country.

Mr. G. T. Clark, F.S.A., then offered some observations on the gatehouse called William de Ireby's Tower, forming the main entrance of the castle. Mr. Clark, in some preliminary remarks, said it was no new thing for the Institute to be cordially welcomed by the corporation of a city, but it had never been their luck before to meet a mayor who was so strong an archæologist, and who was as well acquainted by his studies with ancient Carlisle as his official duties made him acquainted with the Carlisle of the present day. Among those studies he had paid particular attention to the castle. He hoped they would make the most of the gleam of sunshine now appearing, which proved it was not a mere fiction of the Border ballads, but really in Nature that,—

"The sun shines fair on Carlisle wall."

Mr. Clark went on to say that the gatehouse was very peculiar and worthy of notice from the fact that the barbican had been added to the side. The gateway had apparently been so constructed that a little doorway at one side could be opened and a sortie made upon any besiegers attempting to mine the walls. The gatehouse was originally approached by a drawbridge across the moat, but at the end of the last century this bridge was removed and replaced by the bridge of stone on which the members of the Institute were now standing. He pointed out over the entrance of the gateway an obliterated coat of arms, possibly that of Richard III. From the general mixing of the styles of architecture, it was probable, he said, that Carlisle Castle had been built at least twice,—by Rufus and by Henry I., but it was difficult to point out which was the work of William or Henry. The stone was also of a very friable nature, and did not afford many indications useful in fixing a date.

The members then passed under the ancient gateway, into what is now the drill-ground, and covered with a layer of gravel, but which the Mayor explained would be a picturesque green in the olden times. Passing into the inner ward of the castle, the members clustered in the open space in front of the massive Norman keep, which Mr. Clark asserted must date from the time of Rufus or Henry I., although it had undergone many changes externally as well as internally. A thorough inspection of the time-worn building was made,—from the deep and dark dungeons at the basement, to which the flaming candles stuck in the niches of the walls gave a grim and fearful aspect, to the gun platform at the top of the tower.

Having inspected the West Walls and other ancient fragments, the visitors dispersed, to reassemble in the evening at a *conversazione* given by the Mayor in the County Hall. In the Lower Hall, Dr. Freeman, as President of the Historical Section, read an interesting paper on "The Place of Carlisle in English History."

On the second day (Wednesday, the 2nd inst.) there was an excursion in the Penrith district, the first place visited being Kirkoswald Church, situate a little over half a mile from Lazonby Station. The church has recently been restored under the supervision of Mr. Cory, of Carlisle. The Mayor, in the absence of Mr. Cory, who was unfortunately very ill, read some notes relating to the fabric.

After an inspection of the church, the excursionists were summoned by sound of bugle to proceed on foot to Kirkoswald Castle adjoining. Though now a heap of ruins, the castle of Kirkoswald was once a place of considerable importance, and, in the time of the Dacres, one of the finest baronial residences in the north. Dr. Taylor, of Penrith, said the castle had been originally founded about the year 1201 by Randolph Engayne, and, after many changes, had finally passed into the possession of the powerful Dacre family, after whose rapid decadence the castle fell from its high estate, and the work of displenishment and spoliation began. The site presented no natural advantages as a defensive position, but the castle had been surrounded with a remarkably fine moat, which was probably constructed by the Dacres about the year 1500. Mr. Clark subsequently gave some observations on the castle, pointing out that it had been a splendid type of border stronghold, and built not only for the defence of the district but also of the property appertaining to it. At one time the castle possessed a magnificent hall, which, if we relied on history and tradition, could not have been exceeded in baronial magnificence and in the splendour of its internal decorations by any existing in the north in the sixteenth century. The main feature of the ruins now remaining is a tall slender tower, tolerably entire.

The visitors were next driven through the villages of Gamblesby and Little Salkeld, to the famous "Long Meg and her daughters." This is a fine specimen, taking rank as the fourth in England, of the great stone circles. The number of stones that remain, including Long Meg herself, is sixty-seven, of which twenty-seven are upright. Long Meg herself is about 12 ft. high; on her are what is known as "cup and ring markings," which, however, are but faintly delineated. The party having gathered round Long Meg, Mr. J. Evans said he had been asked to give an opinion on this curious collection of stones. So far as he could say it appeared to be one of those very interesting stone circles found in different parts of England and in other countries. Of course, it was certain their presence was dependent, to a certain extent, upon there being large stones in the district. In this way we had the great temple of Stonehenge, built, in the main, of great blocks of stone found on the spot. Certainly, at Stonehenge, a number of stones had been brought from a distance, but the bulk had been found *in sitû*. There had been many disputes about the use of these circles, and the subject had given rise to a vast amount of discussion. They had been regarded as burial-places, as temples, and as places for holding moots, but he would not detain them by giving any opinion on the subject. The Mayor said that within a short distance of where the party stood,—some three or four fields off,—a smaller circle of about eleven stones had been found, and in the centre of these there had been discovered a cinerary urn full of burnt bones. On these stones there were markings precisely similar to those on Long Meg, and much more plain. The Mayor added that there was a curious superstition concerning the stones. A legend was current that a farmer in the neighbourhood at one time commenced to blast the stones, but that night the most terrible storm prevailed that had ever been known in Cumberland. The farmers since then had been very jealous of the stones, so that if even any of the party were seen chipping them they had better look out. [Mr. Clark: That warning ought to be printed in the Transactions.] Professor Stevens said that such markings as those on the stones were found not only in Britain, but in many other countries, especially in Scandinavia, and he could only refer them to a very learned work on the subject by the late Sir J. Simpson. He would add that the discoveries which had been made of late in various countries had led to a conclusion, against which so far as he knew, there was no objection, and which appeared to be entirely trustworthy, namely, that these markings were wholly symbols,—religious symbols pointing back to the worship of a God or the Sun. These markings go back to the earliest ages,—they went back to what we commonly call the Stone Age, the oldest age to which we can go, and extended through the Stone Age, through the Bronze Age, and through the Iron Age. Whatever these tokens might signify, they were exceedingly old, and went back to the cradle of the settlement in all the Aryan lands. Dr. Bruce said that these markings frequently existed in burial-places in Northumberland, and were usually found in the presence of a native British camp. He was of opinion that the markings were of the same signification as the fir cone ornaments were with the Etruscans and the Romans, and he could not help thinking their design was the principle of vitality,—they pointed to the belief in a resurrection and a rising again. People travelling in India saw them to-day.

The party once more entered the vehicles, this time to be driven to Brougham Castle, where, upon assembling in the outer ward of the castle, they were addressed by Mr. G. T. Clark, who pointed out that the very curious pile stands on the right bank of the Eamont, just at the point where it is joined by the Lowther, so that the combined streams cover the fortress on the north, as do the two waters and the marshy ground between them on the west front. The castle, he said, derived great interest from the fact that it was close to the large rectangular camp which marks the site of the Roman "Brovacum." One of the most curious parts about the castle, he observed, was the gateway, which was composed of two parts,—one abutting on the north-east, and the other on the north-west angle of the keep, each with its own defences and gates, the buildings on the north communicating with both. Above the gate is the inscription, "This made Roger." Mr. Clark, however, principally directed the attention of the visitors to the keep, which, he said,

in its present state, was of unusual height, but the uppermost floor had apparently been added at a more recent period than the base. The walls were 11 ft. thick at the base, and at least 10 ft. at the rampart level. In the angles near the top he pointed out several cruciform loops much resembling those at Kenilworth, and a mural oratory. On entering the keep the attention of the visitors was directed to the traces of an arcade with slender piers and trefoiled arches, of an unusual character to be found in a Norman keep. Altogether, he said, the keep was very curious, and would well repay a careful examination.

The visitors, after partaking of luncheon at Eamont Bridge, proceeded to Mayburgh, a circle of stone mounds covered with herbage, with a monolith or stone 12 ft. high in the centre, which Scott thought a monument of Druidical times. It is a short distance from the "Round Table," on the way to Yanwath, and on the right side of the road. On reaching the monolith, Canon Simpson addressed the party, and said that originally there were three stones where the one they were standing beside stood, and those were beside two others at the entrance to the circle, one on each side. The person who occupied the place about 100 years ago came to the conclusion to destroy the stones, and he employed two men upon the work of destruction. One of these men hanged himself, and the other was put in a lunatic asylum. That was what they got for attempting to destroy these ancient monuments. He hoped that by the Ancient Monuments Bill punishment would be meted out in some shape or form to anybody else destroying ancient monuments.

On the third day (Thursday, August 3) the members paid a visit to the Cathedral, where Dr. Freeman delivered an address, some portions of which we give under another heading.

On subsequent days there were excursions to Dalston Hall and Rose Castle, to the Roman Camp at Birdoswald, to Lanercost Priory, to Hexham, to Abbotsford, and to a number of other places.

Mr. John Evans, as President of the Antiquarian Section, delivered a valuable address on the antiquities of the district; and among the papers read in the same section were one on "Cresset Stones," by the Rev. Thomas Lees; one on "Lamp Niches," by Sir Henry Dryden; and one on "Doorway Legends and Inscriptions over Doorways of Old Houses in Cumberland," by Dr. M. W. Taylor. In the Historical Section the Rev. Canon Venables read an interesting paper on "The Dedications of Churches."

In connexion with the Congress an interesting museum of antiquities was opened in the County Hall. It was arranged under the superintendence of the Mayor of Carlisle and the Rev. T. Lees, assisted by Mr. Ready and Mr. W. T. Ready, of the British Museum.

CARLISLE CATHEDRAL.

On Thursday, the 3rd inst., the members of the Royal Archæological Institute visited Carlisle Cathedral, where Dr. E. A. Freeman observed that if a learned man had been suddenly dropped from the clouds into this Cathedral garth, and began to think how much he could find out for himself without any man or book to guide him, he would very readily find, if he lifted up his eyes to the windows of the upper part of the Cathedral tower, that he was in England. He would see Perpendicular windows which could not be found anywhere but in England. He would know at once that he was under the shadow of a great church, and it would not take him long to find out what was the character of the church. It would not take him long to find out it was a regular church. He would see there were the buildings on the right, parallel to the nave, and he would at once feel they were the refectory, and he would be helped to that conclusion if he had been dropped down at Furness and Calder Abbeys before he came to Carlisle. He would see it was not a Cistercian church by the arrangement of the buildings, because in the Cistercian churches the refectory was not parallel to the nave. Then he would doubt, probably, whether it were a Benedictine church. As a matter of fact, it was not Benedictine: it was a church of the Austin canons. He would not be able to say positively to what order it belonged; but he would be able to say it was a great English church of some order of monks and not of the Cistercian order. A further question might be whether it was merely a collegiate or conventual church or the church of a bishop. He did not think there was anything to tell him it was a see,—any episcopal palace. Some local antiquary should be able to tell them whether there was ever an episcopal palace in Carlisle, as there commonly was in episcopal cities, and if not how there never came to be one,—whether it was connected with the long vacancy of the see after the first bishop, or whether after bishops had got feudalised and turned into barons they did not care to have a house in the city. As to the time of the building of this church he would say, "Here we have a Norman minster, not of the smallest size or the greatest, but a moderate-sized Norman church, of which we still have fragments of the nave." He would like to have information to know under what circumstances the nave came to be shortened, but our inquirer could not doubt that there was a much longer nave once than is to be seen now; and if he were told that it was a church of Austin canons he might begin to guess even from the outside a little further. He might, perhaps, guess that the nave had been the parish church, that being the common custom among the Austin canons. That was a point which distinguished this church from other standing cathedral churches in England proper, with a few exceptions. The nave was the property of the parish, and was used as the parish church. The inquirer would see himself that here had been a church in the twelfth century, a comparatively small church, and that a vast and magnificent choir of the thirteenth or fourteenth century had displaced the original eastern limb in a very remarkable way. And he would also see that somebody had in later times gone and destroyed the history of the place by sticking in that grand doorway where no grand doorway was or never ought to be, that the history of the past had been wiped out in order to bring in the pretty things of the present. Here was the refectory, there was the walk in the cloister, and there was the dormitory. There was a little door in the transept originally, but no grand door was there, because there was no grand entrance. Why had the church not been left to tell its own story, to tell every man that the dormitory had come up against the church, and leave the signs that there were of it instead of giving us that new masonry? No doubt the new doorway was a fine thing of its kind, but why not leave them those fragments of history which they came from place to place to make out? It was disappointing when they came to a place to find that some ingenious man had done his best to wipe out the history of it, and that there had been a perfectly wanton sacrifice of the building to make the thing pretty. A doorway was wanted, no doubt, but why not stick it somewhere else and not destroy the historical fragment? From the cathedral garth the party moved into the cathedral, where Mr. Freeman first of all remarked that the nave had not been very early nor, on the other hand, very Late Norman work. If it was the work of Bishop Athelwulf, who was Bishop of Carlisle for a long time, he should be well pleased, as he was a sort of friend of his. Turning to the choir, he pointed out the manner in which it had been widened and otherwise enlarged, and remarked that no doubt when the grand choir was built it was intended some time to pull down the nave and rebuild it, or it might be that the nave being the parish church was not thought about, and the choir was enlarged without regard to the nave at all. Moving into the choir, Mr. Freeman took his stand near the pulpit and pointed out the beauties of that part of the building. The east window, he said, was the grandest window of the kind in England, and he supposed the world. There was a very big window in a church at Perugia, in Italy, that somewhat reminded him of it, but here they had the finest piece of tracery to be seen anywhere. The next to it was that in the Abbey Church at Selby, in Yorkshire, but that had only seven, whereas this had nine bays, and if his memory did not fail him, the bays at Selby were wider. He pointed out the peculiarities in the construction of the roof, no attempt having been made to vault it. He next drew attention to the series of lancet windows in the aisles, remarking that they were rather more perfect than they ought to be. One or two windows had been put in. It was a very curious thing that if there was a piece of history in a building marking its age there came a wise modern architect, a man of taste, with his head full of his own ideas, who felt himself as much above history as the King of Rome did above grammar. This modern architect came and said, "I am the only person who am upon a level with the original architect; I am the only person who knows what he would have done." So the work must be swept away. The wise man of taste must wipe out every thing and bring it back to what he supposed it would have been in his pet century. This wiping out of history, this destruction of the history of an ancient building was called by the strangely sarcastic name of "restoration." "Restoration" commonly meant wiping out of history and building up according to the fancy of some architect to whose tender mercies the building may have been handed over. So it was here. These windows were not the original thirteenth century windows,—they were windows of the nineteenth century, something else had been stuck in and so wiped out history. He expressed some doubt as to the propriety of fencing off the choir from the nave, remarking that he was tossed to and fro on the subject, between the past and the present. In such a case the past was the least harmless, but the case of Carlisle was different, as so little of the nave remained it was necessary to use the choir as the church till somebody should rebuild the nave. If anybody did that he hoped they would build it in nineteenth-century architecture, and not thirteenth.

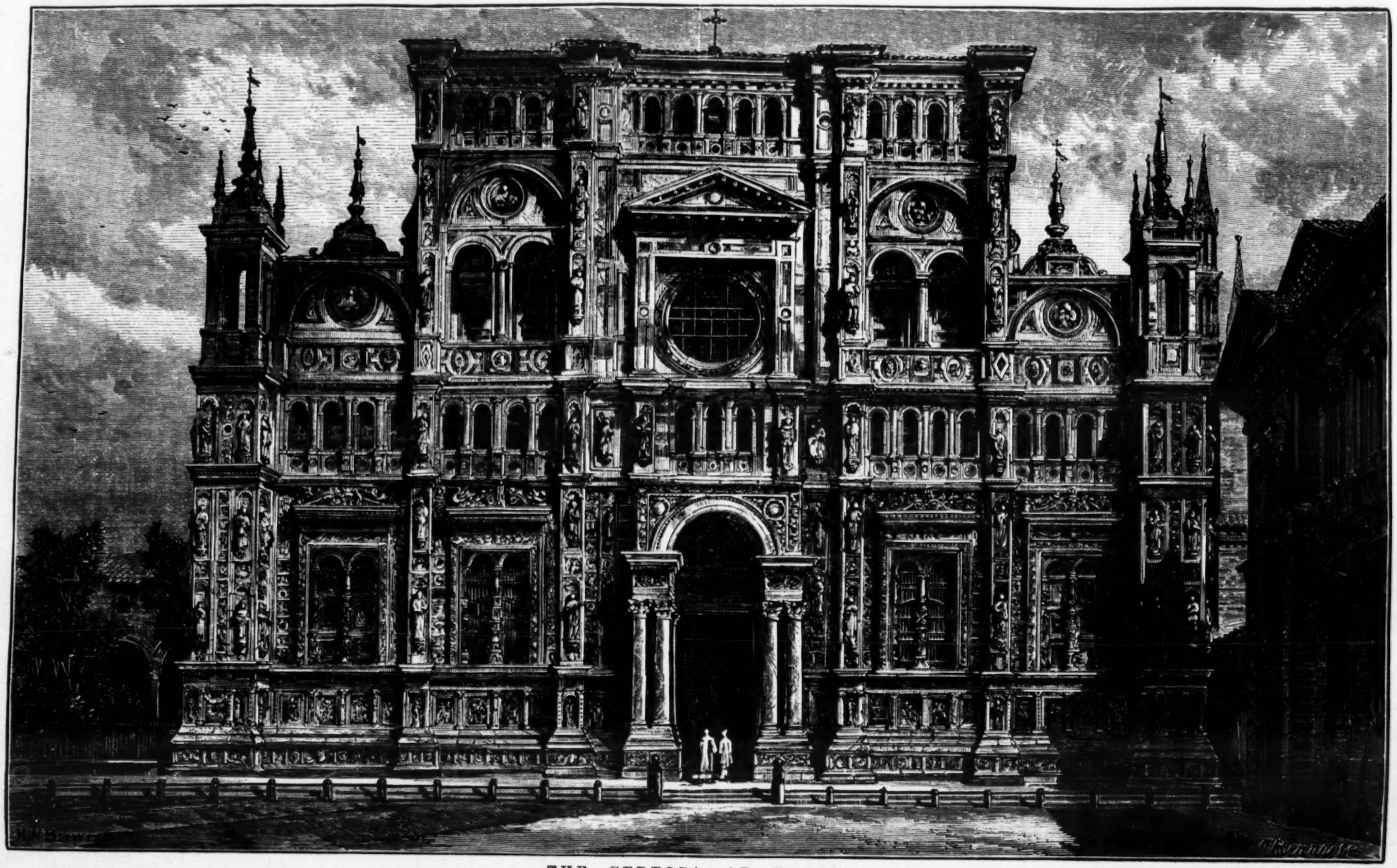
Mr. Micklethwaite expressed his belief that the Cathedral dated back as far as the time of Cuthbert, and that the parish church was the most ancient part of it. With regard to the alteration of the doorway upon which Mr. Freeman had animadverted, he defended the course that had been taken, remarking that it was quite proper the building should be altered to suit the convenience of the time, but he thought Mr. Freeman had spoken excellently well about the windows.

CONGRESS OF ITALIAN ARCHITECTS AND ENGINEERS.

The fourth annual congress of the Architects and Engineers of Italy will be held in December next at Rome. It has been arranged that the opening of the Palace for Fine Art Exhibitions shall take place during the time of the Congress, whose members are to take an official part in that ceremony as well as in that of the First International Exhibition of Art in the Italian capital. The exact dates of these events are not yet announced. It is open to foreign as well as Italian architects and engineers to attend the Congress, provided they notify their intention to the Committee by the 15th of September. The Committee is also ready to receive suggestions as to the questions to be discussed at the Congress up to the 15th of August. The decision of the Committee on these and other points will be made known along with the publication of the definitive programme of the proceedings on the 30th of October. It is already arranged that the period for which the Congress is to sit shall be seven days. There will be a series of excursions to celebrated spots, in order to enable the visitors to inspect various buildings of ancient and modern date in the city and its suburbs.

MUNICIPAL IMPROVEMENTS IN VIENNA.

In no previous period of history have such extensive municipal improvements been carried out in Vienna as within the twenty years from 1861 to 1880, both inclusive. The total amount of expenditure for that period was 7,891,994*l.*, or nearly eight millions sterling, giving an average annual outlay of nearly 400,000*l.* The objects on which these large sums have been expended are as follows:—The city waterworks system, 2,397,137*l.*; school buildings, 741,640*l.*; the new town-hall, 739,705*l.*; street pavements, 649,366*l.*; purchase of land to widen streets, 621,697*l.*; main drainage system, 441,026*l.*; contribution towards Danube regulation, 385,193*l.*; enlargements of city boundary, 293,109; municipal offices, 273,919*l.*; bridges, 237,242*l*; central cattle market, 179,528*l.*; central cemetery, 163,450*l.*; churches and parsonage-houses, 154,618*l.*; market halls, 137,335*l.*; city baths, 123,493*l.*; park gardens, 87,744*l.*; city gasworks, 72,930*l.* city storehouse, 67,428*l.*; other public buildings, 67,317*l.*; and Danube embankment, 48,082*l.*



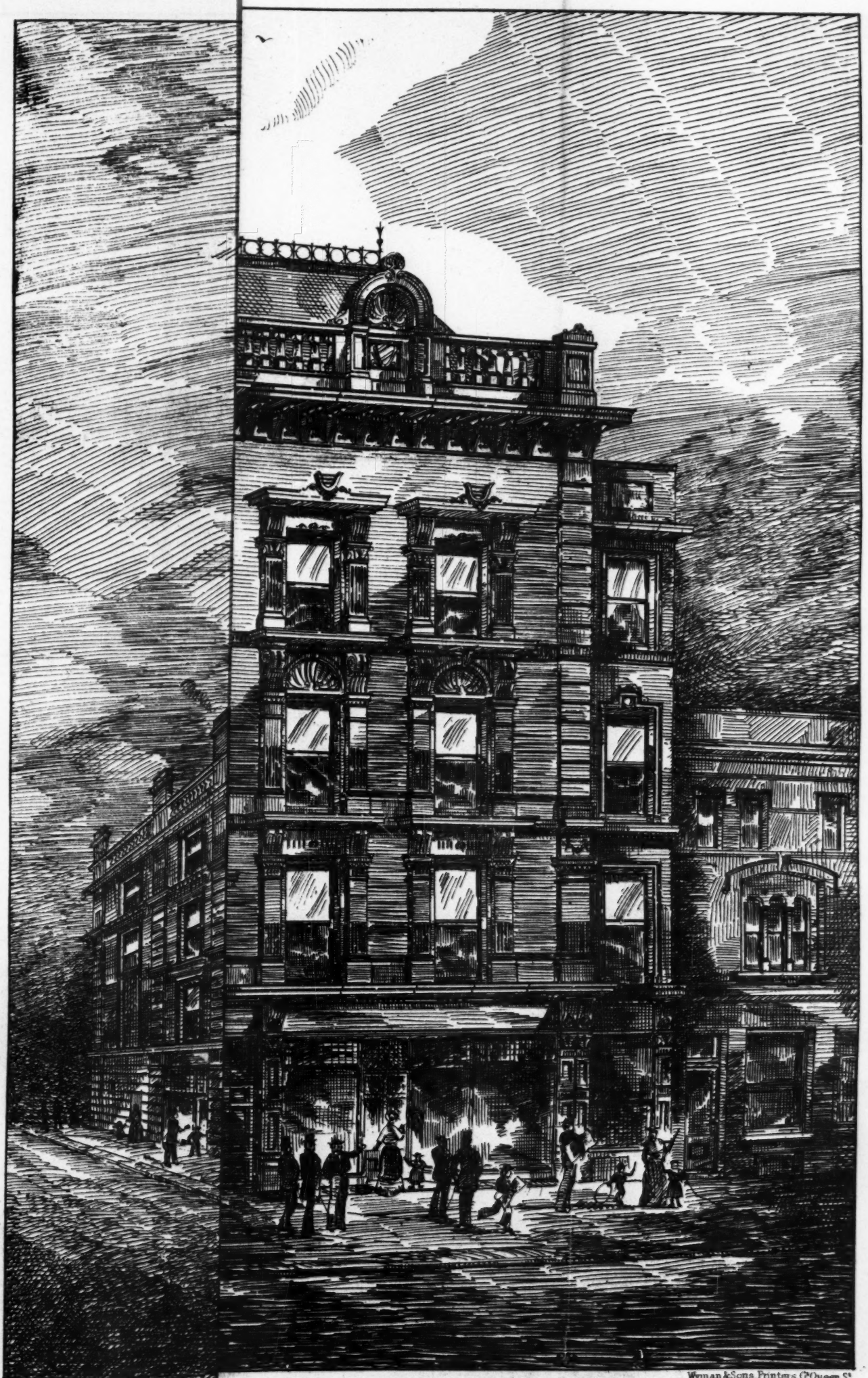
THE CERTOSA AT PAVIA.

Entrance Lodge. Stockton House. Wilts. for Major Yeatman-Biggs R.A.

B.E. FERREY ARCHT
15 SPRING GARDENS. LONDON

Whiteman & Bass, *Photo-Litho* 236, High Holborn

Wyman & Sons, Printers, 74 Queen St.



Whiteman & Bass. *Photo-Litho* 236. High Holbo

Wyman & Sons, Printers, 6 Queen St.

Cross & Wells
Architects
Hastings & London

Whiteman & Bass *Photo-Litho* 236 High Holborn.

The Gaiety Thea

Wyman & Sons, Printers, Gt Queen St.

heatre, Hastings.

Cross & Wells
Architects.
Hastings & London.

Whiteman & Bass, *Photo-Litho*

STAINED GLASS DOOR PANEL——DESIGNED BY MR. G. C. HAITE.

Wyman & Sons, Printers.

ENTRANCE LODGE, STOCKTON HOUSE, WILTS.

The Entrance Lodge of which we give a view is now being carried out by Messrs. Soper & Son, of Salisbury, under the direction of the architect, Mr. B. Edmund Ferrey. It has been designed in character with the house, one of the most interesting Elizabethan mansions in Wiltshire, where extensive restorations, alterations, and additions have been progressing during the last five years, for Major Yeatman-Biggs, R.A., under the superintendence of the late Mr. Ferrey and Mr. B. E. Ferrey. The lodge is built of Chilmark stone, and the roofs will be covered with Broseley tiles. All the windows will be fitted with Burt & Potts's wrought-iron casements.

THE CERTOSA AT PAVIA.

The Certosa at Pavia has been described as "the most magnificent monastery in the world." Whether this is an exaggeration or not, there can be no doubt that it is one of the noblest monuments in Italy, and it is with great regret that we have heard reports to the effect that it is not receiving that care and attention which so superb and interesting a building merits. We trust that we have been misinformed, and shall be only too delighted to be in a position to contradict the rumours which have come to us, from several different sources, of "fallen arches," "water pouring through roofs," "accumulations of rubbish and dirt," &c., which seem like the first warnings of a building falling into ruin. To the ordinary run of people a few drops of rain finding their way through the roof of some cloister, or a few heaps of rubbish accumulating in corners of a disused building, may mean little, but to an architect they speak volumes. The general public may regard the giving way of an arch or two in a vast building a matter of little account; but those who understand such things can tell lamentable histories of public monuments where such things are neglected. "A stitch in time saves nine" is more true of buildings than even of garments. If "little defects" of this kind had been attended to, if roofs had been mended when they began to leak, and arches tied up or mended when they showed signs of falling, the enormous sums of money spent upon the restoration of Mediæval buildings, which has been such a marked feature of our time, would have been entirely unnecessary and those munificent donations of hundreds of thousands of pounds towards the restoration of our cathedrals might have furnished our dismal manufacturing towns with noble minsters in place of the meagre 5,000*l.* churches which rear their thin walls and spikey gables in the midst of vast factories and huge warehouses. The Mediæval buildings of Italy are, as a rule, in an excellent state of preservation, and it would indeed be a sad misfortune if they were not to be preserved in such a condition. We hear that a society is being formed in Italy for the purpose of looking after ancient monuments. We trust that the members will place before themselves the absolute necessity of arresting the first symptoms of decay in those vast buildings, many of which, like the Certosa, have ceased to be of practical use at the present time.

The Certosa at Pavia was founded in 1396, and the greater portion of the church was erected immediately afterwards. It is very remarkable because it shows, in work of the same date, the traces of both the Romanesque and Renaissance styles, although the general design is Gothic. The façade is later than the other portions of the church, and was commenced in 1473, and carried out from the designs of Borgognone. Probably, however, the upper portion of the front is of a slightly later date, and it seems as if the design had been simplified, either through funds being insufficient to carry out the work in the extremely elaborate manner in which it was commenced, or in deference to the views of the architect appointed to continue and complete it. Be this as it may, there can be no doubt that, delicate and elaborate as the lower portion of this front is, it is rather the architecture of the painter or sculptor than that of the architect. One hardly likes to criticise such a beautiful work, but from a strictly æsthetic point of view the sculpture of this front seems to be too like painting, and the architecture too like sculpture,—in fact, one might almost suppose that a painter had modelled the sculpture and a sculptor had designed the architecture. The upper portion of the front, though far less beautiful in detail, is more satisfactory from an architectural point of view, and is superior in general composition. The whole of this splendid façade is constructed of marble. There is a kind of tradition that Peter Arler, of Gmünd, was for some time architect to the Certosa, but there is nothing about the building that bears a resemblance to his known works, the church at Kolm, or the choir of the Cathedral at Prague. Another tradition ascribes the merit of the design to Henry Arler, the architect of Holy Cross Church, Gmünd, and reputed architect of Milan Cathedral; but there is nothing to carry out this suggestion.

DESIGN FOR GLASS PANEL.

This design is given as an example of domestic stained glass, suitable for the panel of an entrance or hall door. A door divided into two panels, size as shown, with a change of subject in the pot, would come very effectively.

THE NEW GAIETY THEATRE AT HASTINGS.

The new Gaiety Theatre at Hastings has been opened. In connexion with it are a restaurant, shops, offices, and other buildings, the whole of which have been erected for Mr. George Gaze, the sole proprietor, from the designs of Messrs. Cross & Wells, of Hastings and Chancery-lane, Mr. C. J. Phipps, of London, being consulting architect with regard to the theatre portion of the buildings.

The buildings have a frontage of 71 ft. to Queen's road, and 118 ft. to Albert-road.

The restaurant occupies the corner of the block, and contains a good bar on the ground-floor, grill-room on the first-floor, smoking-room, and residential rooms over, with kitchen and offices at the top of the building.

On the south side of the main entrance in Queen's-road are two shops and the entrance to Queen's-avenue, a new arcade recently built in rear of the theatre. In Albert-road are three shops.

Over the first-named shops and entrance to the arcade are three suites of large offices, with lavatory, &c., on each floor, and attendants' rooms on the upper floor.

The entrances to the stalls, dress-circle, and upper circle of the theatre are from a spacious vestibule in the centre of the building in Queen's-road; those to the pit stalls, pit, amphitheatre, and gallery from Albert-road. The staircases are wide, and fireproof, and all parts of the house communicate by pass-doors to every staircase. In addition to the ordinary staircases to the gallery, there is a second relief staircase, 5 ft. wide, from the gallery and upper circle. It is stated that the house, when full, can be emptied in three minutes. The house will seat comfortably 1,200 people. There are three rows of orchestra stalls (for about 50), a good pit, and four rows of pit stalls; a dress circle to seat 165; an upper circle for about the same number, and a good gallery. There are spacious refreshment-rooms and retiring-rooms to all parts of the house.

The width of the proscenium is 25 ft., and the depth of the stage is 30 ft. Ample accommodation is provided in the way of dressing-rooms, &c., over the side shops.

The materials used are Fareham brick facings and Portland cement dressings, which are found to stand the sea air better than Bath stone, the foliated work being carved in position, and not cast in the ordinary way.

The whole of the building has been executed by Mr. W. J. Rodda, builder, of St. Leonard's-on-Sea, his superintendent of the works being Mr. L. Dillon (formerly clerk of works to the recently-built new baths). The ornamental fibrous plaster work in ceiling, proscenium, box fronts, &c., is by Messrs. G. Jackson & Sons, Rathbone-place, London. The sun-burner and gas-fittings are by Messrs. Vaughan & Brown, of Kirby-street, Hatton-garden. The decorations (extremely well done) are the work of Mr. Edward Bell, of Lisson-grove. The fire appliances are by Merryweather & Sons. The act-drop has been painted by Messrs. Grieve, of Macklin-street, Drury-lane. The stage machinery is by Mr. J. George, and the upholstery by Mr. Whiteley, of Westbourne-grove.

The theatre was successfully opened on the 1st of August, Mr. Henry Turner, of Drury-lane, being manager for the proprietor.

THE UNIVERSITY OF EDINBURGH AND MR. JAMES FERGUSSON.

On the 1st inst. the degree of LL.D. was conferred by the University of Edinburgh on Mr James Fergusson, F.R.S., who is so widely and honourably known by his writings on architecture.

Professor Kirkpatrick, Dean of the Faculty, in presenting Mr. Fergusson to the Chancellor (Lord Glencorse), said,—I have the honour to present to you, my Lord Chancellor, for the degree of Doctor of Laws, Mr. James Fergusson, Doctor of Civil Law, and Fellow of the Royal Society, the distinguished historian of architecture, whom the Senatus Academicus of the University of Edinburgh have deemed eminently worthy of this distinction. Born at Ayr, and partly educated in the High School of Edinburgh, and partly in England, Mr. Fergusson afterwards went to India, and was there engaged in mercantile pursuits. But after a few years he abandoned these for the more congenial study of art and architecture. Not only among architects, civil and military, but among all lovers of art,—and, indeed, among all persons of culture where the English language is spoken,—Mr. Fergusson's name is a household word. In the year 1845, and several previous years, he travelled very extensively in India and in many other countries for the purpose of studying various styles of architecture. The results of those studies and unwearied researches have been very numerous and very valuable. (Having enumerated Mr. Fergusson's works, Professor Kirkpatrick continued:—) Mr. Fergusson is one of the foremost authorities of the age on the very interesting and important subject of military architecture or military engineering. So far back as 1849, Mr. Fergusson published a most valuable essay upon the then entirely new system, upon the subject of fortifications or defences by means of earthworks, a system which was afterwards adopted by the Russians at Sebastopol, by the Americans during their civil war, and subsequently, I think I may say, by all the great military nations of the world. In connexion with his great distinction in this province, Mr. Fergusson has, since 1859, acted as one of the Commissioners appointed by her Majesty the Queen to superintend our national coast defences. Lastly, but perhaps not leastly, must be mentioned Mr. Fergusson's distinguished labours as a natural philosopher. Within the last few years, Mr. Fergusson has published a most valuable work upon the descent and oscillations of rivers, of which I need only say that it is a standard work upon this subject. Among many other distinctions, I must mention the gold medal with which Mr. Fergusson was presented in 1871 at a great meeting of the Institute of British Architects, presented to him with the approval of her Majesty the Queen, as being the foremost living British authority upon the subject of architecture. On these grounds, I ask your lordship to confer upon Mr. Fergusson the degree of Doctor of Laws, of which he is pre-eminently worthy.

ARCHITECTURE ABROAD AND IN THE UNITED STATES.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Mr. Arthur J. Gale, architect, of Surrey-street, Strand, the first recipient of the Godwin Bursary, and who selected America as the scene of his inquiries, has reported to the officers of the Institute his return, after an absence of three months. Mr. Gale speaks warmly of the courtesy he experienced at the hands of several American architects.

Memorial to an Officer of the 19th Regiment.—A painted window, of a somewhat curious character, has just been erected in the church of Preston, near Brighton, representing the colours of the 19th regiment, with the engagements, military trophies, and the regimental badge, surmounted by the Crown. The window, which is supplied by Mr. Taylor, of Berners-street, is placed in memory of Captain George V. Macdonald by his brother officers.

WORKMEN'S DWELLINGS IN GERMANY.

The subject of these remarks is not one upon which it is to be taken for granted that England has nothing to learn from other nations. The problem of cheap and efficient labour has been solved by Germany in a manner which has enabled the manufacturers of that country to secure and retain a hold upon even our own markets for many articles in which economy of production is of primary importance. Hence it may not be amiss to examine what is now doing amongst German philanthropists in the direction indicated.

The physical gain derived from commodious dwellings finds its parallel in many natural phenomena, and requires no detailed proof. Mental advantages of a not less important character are connected with the practical application of this principle. As Dr. Tomei remarks (in a paper prepared for a recent Industrial Congress in Germany) a clean and comfortable dwelling encourages its occupants to ornament it as far as they can, and is a magnet which attracts the bread-winner from dissipation. If his dwelling is a place where he is comfortable, he will soon give up the tavern, and will economise his personal expenses so as to furnish his rooms with such adornment as become his station.

This important subject has recently attracted special attention in Germany, in connexion with the competition instituted by the "Concordia" Society for the best design for a workman's house. As this question is most readily solved from a strictly practical point of view, the facts cited by Dr. Tomei are a valuable guide, and though a certain allowance must be made for the divergence of national habits, still much may be learned from the results he brings forward.

The Portland cement factory at Lebbin has in connexion with it a colony, as it is called, which has grown from a small beginning, which consisted in the erection of several workmen's houses. Those who had been longest working at the factory had certain preferential advantages, but, in all cases, the possession of such saved capital as was necessary was insisted upon before permission to build was granted. The dwellings built by the factory proprietors are mostly detached buildings, containing from five to seven separate sets of apartments. These buildings have grounds round them neatly laid out, which, in conjunction with the curtained windows of the houses, produce on the whole a neat and pleasing effect. The materials used are bricks, both burnt and air-dried.

The houses with five dwellings are thus divided:

Lower Floor.—Two dwellings, each containing two rooms, 14 ft. 8 in. by 14 ft. 8 in., and 12 ft. 4 in. by 14 ft. 8 in.; one room, 6 ft. 5 in. by 14 ft. 8 in.; and a kitchen, 10 ft. by 12 ft.

Upper Floor.—Two large dwellings, and one of smaller size. Each of these dwellings consists of a kitchen, a living room, and a bedroom.

In the houses containing seven dwellings, the lower floor contains four dwellings, and the upper floor three, as previously described. The dwellings on the lower floors have in most cases separate entrances, while the upper floors are reached by a common staircase. There is a small stable attached to each house, and the separate occupants of the apartments have each space in it for pigs as well as storage for wood, &c. The arrangement of houses thus described is capable of being applied alike to private and public requirements. Thus, in the lower stories of various houses are the post-office, the infants' school, the infirmary, &c. In addition to these separate houses there are some blocks of seven houses, each of which is capable of accommodating four families. A building runs parallel to these houses devoted to purposes similar to those for which the stables in the detached houses are intended. There is an orphanage attached to the colony, and a general co-operative store supplies the principal necessaries of life to the inhabitants. The workpeople are allotted dwellings in these houses for a monthly rent equal to 4s. or 4s. 6d. A field for planting potatoes is also at their disposal, and laundries with mangles form a part of the general plan.

The personal comforts of the unmarried workmen and of those whose families live at a distance are provided for in the colony. A large lodging-house has been established, with from four to six beds in each room, and the men are charged only what is sufficient to cover the washing of sheets, &c. The house steward provides coffee and milk at about ½d. a quart every morning. Dinner, of a good nourishing character, is served for about 1d. Of course, the factory is obliged to supplement the receipts in order to prevent loss, but this low scale of charges is instituted in order that the workmen who live at a distance may be able to devote the greater part of their earnings to the support of their families, and not be under extra expense from having to reside at a distance from their work.

The usual benefit societies exist, and are supported, to a certain extent, by the profits of the co-operative stores. The amusement of the workpeople is duly provided for by means of a bowling-green and by vocal and orchestral societies.

Where economy is a primary necessity, it is impossible (according to Dr. Tomei's arguments) to give any serious consideration to the plan of having separate houses for each family. Where, however, there is a possibility of workmen being able to build their own dwellings, he admits that the question of having joint habitations is open to discussion. He remarks, with justice, that it is unadvisable to give more rooms for each separate household than are necessary for health, as the trouble of keeping too large a set of rooms in order often leads to untidiness and neglect on the part of the occupants.

The guiding principles of Dr. Tomei's views are evidently in harmony with the almost patriarchal system which is frequently to be met with in Germany. Kindness being a more powerful inducement than severity to continued and intelligent exertion on the part of the employed, he argues that the trouble and expense to which employers of labour go to secure the happiness of their workpeople are not lost, but are repaid by the quantity and character of the work produced.

PROPOSED PUBLIC BUILDING WORKS IN DUBLIN FOR UNEMPLOYED LABOUR.

Last week a deputation from the Labourers' Association here waited upon the Lord Mayor and Municipal Council.

Mr. Murphy, one of their number, said that there was a very large number of unemployed persons in the city, 9,000 people receiving relief through the unions. The only work here now for labouring men was at paving and sewering, but there was nothing like sufficient work to meet the requirements of the unemployed. He attributed the cause to the agitation in the country, which had led to such widespread distress. The merchants who had hitherto employed labour were now, from that cause, unable to do so. For the last couple of years the merchants of the city had received no money: they were now on the verge of bankruptcy, the exceptions being those who were living on the capital they had accumulated in more prosperous years. It was said that the tenant farmers had saved 20,000,000*l.* in consequence of the agitation, and he asked, Where had it all gone to? The labourers had received no portion of it. It was the circulation of money that was wanted, and no country could be prosperous while its labourers remained without employment. Wages were lower than ever, and in their hour of need the labourers now applied to the Corporation for aid. If they wished to relieve them they could build labourers' houses for the use of those who could not pay as much as the artisans were obliged to pay. A clause had been proposed for insertion in the Land Act, having for its object the emigration of the surplus population of the country, and that was opposed by the advanced section of the Irish members, who urged that, because the country had once contained 9,000,000 of people, it should now support an equally large population. He thought such opposition was unwise, and he was in favour of the emigration of those who could find no employment, and who could not be otherwise provided for. The position they were in now amounted to this: they were near eating each other in the streets of Dublin.

The Lord Mayor said the Corporation would attend to the practical propositions of the deputation. It should not be forgotten that since he came into the Corporation the latter had spent in public works, in which the labourers, of course, had a share, 200,000*l.* They now proposed to spend over 50,000*l.* in improvements. The Corporation paid 600*l.* a week in labourers' wages, and they contemplated the formation of new streets. There would be a new street in connexion with the swivel bridge, and another at Cork-hill. The exhibition project, too, contemplated and involved an expenditure of 10,000*l.* or 12,000*l.*, and on that they were spending 400*l.* or 500*l.* a week. The Council would take into consideration the wise suggestion for the erection of dwellings for the labouring classes who were not able to pay as high a rent as the artisans. He would draw particular attention to the fact that 100,000*l.* had been voted by Parliament for the construction of a new museum in Kildare-street. The plans were in, all the preliminaries were perfected, and there was no excuse for the Government not taking immediate action in this matter and pushing forward these works. The Government could also give employment by building the new sea-wall along the Kingstown line, giving the citizens of Dublin a sea drive, and an approach of which they had been deprived by the railway company. There was thus work for the expenditure of thousands of pounds in giving employment. As for the practical suggestion of the deputation, the Council would take it into consideration.

The deputation having retired,

Mr. M'Evoy moved, Mr. Vereker seconded, and it was resolved,—"That the Artisans' Dwellings Committee be informed that the Council have received a deputation upon the subject (amongst other matters) of dwellings for the labouring classes, and that the Council would be prepared to receive favourably such suggestions as the Committee may make on the subject."

NEW ASSOCIATION AT DÜSSELDORF.

The financial result of the Exhibition at Düsseldorf in 1880 was satisfactory, inasmuch as a surplus of 10,000*l.* was left. This sum has been devoted to the foundation of an association intended to rival the societies which have done so much in South Germany for the advancement of industrial art. The new organisation will devote its attention to the collection of objects illustrative of art as applied to practical uses, and to the establishment of classes in connexion with subjects of a kindred nature. It is also contemplated to have an information office which will answer any questions as to technical subjects which the members of the society may wish to ask. A complete library of technical literature will be established, and finally a journal will be started, which will be the official organ of the society, and will, it is anticipated, be widely circulated amongst manufacturers and others interested in the various objects of the association.

EPPING FOREST TRAMWAYS.

A meeting of the shareholders took place on Tuesday, August 1st, at the office of the company, the chairman, Mr. Mark Shephard, presiding. There was a large attendance. Mr. C. B. King, one of the company's engineers, stated that, although the rails had only been delivered a few weeks, about 500 yards of line were already completed, and the first section will be opened for traffic in about three weeks' time.

The company intend to apply in the next session of Parliament for power to use steam, and for this purpose the line is very substantially laid.

Mr. Hammock, a director, mentioned that at Batley, in Yorkshire, where both steam and horse power have been in use, it had been proved that a saving of 2¾d. per mile had been made by the adoption of the former. The engines were constructed by Merryweather & Sons, who have had experience in this branch of engineering.

Messrs. B. Cooke & Co., of Battersea, are the contractors for the works, and Messrs. Merryweather have the contract for the cars.

Mr. Thomas Armstrong and Mr. H. Bowler (the director and assistant-director for Art of the Science and Art Department) have been instructed to visit the Art Schools of Germany and the Industrial Exhibition at Nuremberg, and to prepare a report on German art-teaching.

THE LONDON AND SOUTH-WESTERN BANKING COMPANY'S NEW BUILDINGS AT PECKHAM.

The premises occupied by the London and South-Western Banking Company at Peckham, being on the line of improvements now going forward at Camberwell and Peckham, their removal is necessary for the widening of High-street. The company are at present erecting spacious new bank buildings on a site immediately opposite to Rye-lane, Peckham, and these when completed will be of a very ornamental character.

The buildings will have a frontage to High-street of 50 ft. length, and 40 ft. in height to the cornice. The buildings will have a deep basement, with three stories above the ground-floor, the upper story consisting of arched dormers in the roof. The east end of the frontage, which is carried to a height of about 60 ft., terminates with an ornamental tower. The ground-floor portion of the frontage consists of red Aberdeen polished granite columns and piers, resting on grey granite bases, and supporting a projecting cornice in Portland stone. Between the first and second floor windows there are double columns and pilasters, in Mansfield stone, with Portland stone bases and capitals, surmounted by a dentilled cornice, also in Portland stone. The windows of the several floors have carved architraves and panels, surmounted by ornamental pediments. The west portion of the ground-floor will contain two shops, the entrance to the banking-house and other apartments in connexion with the business of the bank being at the east end of the frontage under the tower. The building is carried to a depth of 100 ft. from the High-street frontage, the business of the bank being intended to be conducted at the rear of the premises. The arched entrance to the bank, in Portland stone, is flanked on each side with Aberdeen polished granite columns. This entrance leads into a corridor, 11 ft. in width, from which the banking-house is reached. The corridor, as well as the banking-house, will be richly decorated and finished. The floors of both will be paved in Rust's mosaics, and along each side of the corridor there will be a range of fluted scagliola columns. The banking-house will be 46 ft. by 32 ft., and carried round the apartment will be twelve scagliola columns, uniform with those along the corridor. The walls will be divided into panels, with an enriched coved cornice; and in the centre an artistically-executed hexagonal lantern-light. The height of this apartment to the ceiling will be 18 ft., and to the apex of the lantern-light 25 ft. The other apartments on the ground-floor will consist of the manager's private room and waiting-rooms. The upper floors will contain the manager's residence, together with the servants' apartments, kitchen, &c.

A chief feature in the basement will be the strong-room, a fireproof apartment, built on a bed of concrete 3 ft. 6 in. in depth, the walls being 1 ft. 9 in. in thickness, of Stourbridge fire-brick, built in Portland cement and hoop-iron bond. The safes, doors, and fittings of the strong-room will be furnished by Milner's Safe Manufacturing Company, of London and Liverpool. The basement also will contain the heating apparatus for the bank.

The architects are Messrs. James & J. S. Edmeston, of Old Broad-street, the contractor being Mr. Shepherd, of Bermondsey. The estimated cost of the building is 12,000*l*.

THE FALL OF A CHURCH TOWER.

The terrible accident at the village of Langen Lipsdorf, near Berlin, in which a church tower that was nearly completed fell in a heap, bringing down all the scaffolding, and killing some and severely injuring others of the thirty workmen engaged upon it, has been the subject of legal and professional inquiries, with a view to ascertain the cause of the disaster. The tower was to be of a total height of 112 ft., and at the time of the accident about 70 ft. had been finished. The dimensions were small, the sides being respectively 14 ft. 9 in. by 14 ft. The two lowest stories of the tower were together 24 ft. 6 in. high, and their walls were 3 ft. 1½ in. thick in front, 2 ft. 10 in. at the sides, and nearly 2 ft. 4 in. at the back. The outer facing consisted of erratic granite shaped into blocks of 6½ in. and 8 in. in height and breadth. The internal facing was of brick. The space between the facings was filled with fragments of brick and stone. The mortar employed was made with Saxon brown or meagre lime. The third and fourth stories of the tower were together 23 ft. high, and the walls, 21 in. in thickness, were built in the same way as those below. The fifth story, 16 ft. 6 in. high, had its walls constructed entirely of brick. The work had already been finished thus far. The tower was now to be capped with a simple spire of wood and slate, surmounted by a cross. Preparations were already going on for the commencement of the woodwork of the spire when the calamity occurred. The entire structure suddenly collapsed. The front wall of the tower fell completely as far down as the springing of the arch over the entrance-door, about 8 ft. from the ground. Of the back wall adjacent to the body of the church about 26 ft. was left standing. The side walls both fell. The parts left standing rose obliquely from the level of the springing of the front arch in a steep and stair-like fashion, to where they joined the back wall. On the top of the heap of ruins lay the diagonal beams of the scaffolding and the brickwork of the fifth story of the tower. Below lay the scaffold planks and granite stones and fragments of the lower stories. This position leads to the inference that it was the walls of the lower stories of the tower that first gave way. This inference is confirmed by the observations of the workmen who happened to witness the collapse. According to the report of the authorities, one cause of the accident was the use of very inferior mortar. The mortar employed was composed of five parts of sand to one part of lime. This material had practically not set or bound the stone and brickwork together. Another chief contributory cause was the fact that the bond of the masonry work was in a very high degree imperfect. Out of 640 granite blocks used in the facing, there were only thirty bonders having a length of about 15 in. There was, therefore, only one bonder to every twenty stones. The interior brick-facing too, was, for the most part, only half a brick in thickness, and the bricks were laid so that there was only one bonder to two, or often three, stretchers. The filling in between the facings was also very badly done, there being many small fragments of brick and stone, with insufficient mortar, and that of the ridiculously inferior quality above described. Altogether it is obvious that this was a very bad case of scamping, which is likely to cost the contractors very dearly.

ESSEX ARCHÆOLOGICAL SOCIETY.

The Essex Archæological Society, which was inaugurated at Colchester in December, 1852, commenced the celebration of its thirtieth anniversary at Colchester on the 1st inst. The members of the St. Paul's Ecclesiological Society, and other visitors, were invited to share in the business of the meeting.

The members were conducted over the castle by Mr. F. M. Nichols, of Lawford Hall, who pointed out the principal features connected with it. At noon the annual meeting of the society was held in the library of the Castle. Mr. G. Alan Lowndes, of Hatfield Broad Oak, the President, occupied the chair, and Mr. H. W. King, hon. secretary, read the report of the Council for the past year.

On the motion of the Rev. G. C. Berkely, seconded by the Rev. H. Hayes, the report and balance-sheet (which were of a satisfactory nature) were adopted.

Mr. C. Forster Hayward moved that the thanks of the meeting be given to the president, vice-presidents, council, and officers for their services during the past year, and that they be re-elected, with the addition of Capt. Budworth in the place of Dr. Bree. Mr. Hayward said the services of their president were too well known to need comment. Mr. Lowndes was always ready to meet them and to assist them in every way, and the same might be said of the other gentlemen included in the resolution.

Mr. Benton seconded the vote of thanks, and it was carried unanimously.

The President said he was extremely obliged to them for the honour they had conferred upon him by his re-election. It was a great pride and pleasure to him to occupy such a position, although he felt that he filled it very unworthily. The principal work that had fallen upon him had been in editing the history of Hatfield Broad Oak. This had been a labour of great pleasure, and he was glad to find that those papers written by his father, and edited by himself, had been so much appreciated by the society.

Mr. King also briefly acknowledged the compliment paid him. He said he served as hon. sec. with very great pleasure and cheerfulness, and he hoped he should be able to do so as long as he was spared. He believed that Mr. Chancellor and himself were the only members of the Council who were at the inaugural meeting of the society, so that it would be understood he was rather an old servant.

After the transaction of other business, the meeting proceeded to make a perambulation of the town, and inspected the following places of interest:—St. Helen's Chapel, St. Martin's Church, Holy Trinity Church, the Balkerne Gate, Guard House and Roman Walls, Schere Gate, St. John's Abbey Gate, St. Giles's Church, St. Leonard's Church, and St. Botolph's Priory. By the invitation of Mr. James Round, treasurer of the society, a *conversazione* was held in the library at the Castle from eight till eleven p.m., when several papers were read and discussed.

On Wednesday there was an excursion, starting at ten. The places visited included Chappel, Colne Church and Priory, the churches of Great and Little Tey, Marks Tey, Copford, and Stanway.

SIR FRANCIS DRAKE IN LONDON.

"In the night of the 22nd of January, 1569, William Hawkins, junior, esq., Governor of Plymouth, writing to the Privy Council, says,—"It may please your honours to be advertised that there is, this present night, arrived into the port of Plymouth one of the small barks, the *Judith*, of my brother Sir John Hawkins's fleet, from the Indias." The captain of this privateer of 50 tons had brought back nothing but his ship after months of exploitering in the Spanish Main. His name, not mentioned in the above report, was Francis Drake, who ten years afterwards entered the harbour of Plymouth on board his good ship *Hind*, which had circumnavigated the globe, and stepped ashore not far from the spot where a monument to his memory is about to be erected. This same *Hind*,—

> "The great ship which around the world has run,
> And match'd in race the chariot of the sun,"—

was by Queen Elizabeth's orders drawn up in a creek near Deptford. The queen dined on board the ship, and knighted the captain.

Within a century ago any one wandering among the network of lanes and alleys "without Temple Bar," whose site is now occupied by the Courts of Justice, might have noticed a tavern of evil repute, the wreck of the Ship Inn, standing in a gloomy, ruinous yard, to which it had given its name, 300 years ago. Robert Chambers, in his "Book of Days," mentions that "Ship-yard denotes the sign of the 'Ship,' a house established in honour of Sir Francis Drake, and having for its sign the bark in which he circumnavigated the world." This statement is incorrect. Drake was not knighted until April, 1581, and the inn was known as the "Ship" ten years previously, for in 1571 "an inn near Temple Bar, called the 'Ship,' was granted to Sir Christopher Hatton." An explanation of Chambers's error based upon rumour is to be found in Walpole's "Dictionary of Engravers." In his mention of Faithorne, the distinguished engraver of the time of Charles I., he says:—"Faithorne set up in a new shop at the sign of the Ship, next to the Drake, opposite to the Palsgrave's Head Tavern without Temple Bar." Here the "Drake" is mentioned as an inn apart from the "Ship." Forty years ago these three houses of entertainment had vanished, leaving in their places a filthy public-house and a den in which beer was retailed.

Only one of Drake's dwelling-places in London is recorded. Stow, in his survey of "Downegate [Dowgate] Ward," says, "On the east side of this Downegate-street is the great old house called the Erber, near to the church of St. Mary Bothaw. Geffrey Scroope held it by the gift of Edward III." After passing into the hands of many noble proprietors, "it was lately new builded by Sir Thomas Pullison, Mayor, and was afterwards inhabited by Sir Francis Drake, that famous mariner." No doubt the neighbourhood was much frequented by sea-faring men, for Stow, in explaining the name of the church burnt down in the Great Fire and not rebuilt, writes, "St. Mary Bothaw,

or Boatehaw, by the Erber,* hath the addition of Boathaw, or Boat haw, of near adjoining to an haw or yard, wherein of old time boats were made and landed from Downgate to be mended." The fire devoured the famous mariner's house shortly after the *Hind*, which had been fitted up as a banquet-hall, had been broken up. The name of Nelson is attached to several London streets and squares, and to more than a score of taverns and public-houses. There is one Drake-street, but not named after him, "for whose fame the ocean sea was not sufficient room."

THE BERLIN ROYAL THEATRE AND OPERA HOUSE.

The architectural changes consequent on the suggestions of the Government officials have been designed with a view to facilitate the immediate egress of the audiences in case of fire. They are now being carried out by Herr Hense, under the superintendence of Herr Persius. The complicated requirements of the modern stage are being duly kept in view. As in the other instances to which we have lately referred, the iron curtain forms a prominent feature in the proposed measures of safety. In both the houses named it is made of corrugated metal. Instructions have been given for a daily trial of the iron curtain to insure its being in working order. It has been found possible to let down the iron curtain of the Royal Theatre in sixteen or seventeen seconds, and to wind it up in two minutes.

In both houses additional entrances for the public have been constructed, and some seats have been taken away from near the entrances of the pit in order to make the egress more free. The stage has further been separated from the auditorium by massive walls and iron doors. To complete the isolation, such drains as may require to be laid down will be of iron, and will be provided with appliances to enable them to be closed in the event of fire, it being thus contemplated to prevent the passage of sparks which might cause a conflagration to spread.

The iron curtains have the following dimensions:—Opera House, 52 ft. 6 in. in width and 41 ft. in height; Royal Theatre, 39 ft. 6 in. in width and 39 ft. 6 in. in height.

The works at the Royal Theatre are in such a forward state that the theatre is expected to re-open for the season on August 25th.

PROPOSED SUBSTITUTION OF WOOD FOR STONE PAVEMENT IN COUNTY DUBLIN.

At last week's meeting of the Drumcondra Commissioners at Holly Park House, Mr. R. M'Mullen presiding, Mr. Leonard, C.E., read a report on the expediency of adopting some system of road covering other than macadamising. He said that he had given special consideration to the question of wood pavement, using Irish beech, of which an abundant supply could be had in the county Dublin, and in dealing with it he had considered four matters, namely, convenience, safety, durability, and cost. With regard to the first, all things being equal, wood pavement possessed advantages over any other kind, and was far easier and safer for horses than granite or asphalte. In places where wood pavement had failed, he believed the process of laying had been the cause of failure, or through the action of percolating water being overlooked. About 6,912 yards would have to be laid down, about 6 yards in width, giving an area of 41,472 square yards to be paved. The cost would be only about 10s. a yard, so that the total cost would be 20,736*l*. He recently saw in Birmingham wood pavements which had been laid down over fourteen years, and they were now just as good as new.

Mr. M'Mahon said the report was an admirable one. The roads were at present in a most unsatisfactory state, notwithstanding the cost of repair was extremely large, being between 1,300*l*. and 1,400*l*. a year for the carriage-way alone. If they borrowed 20,000*l*. for this work they could pay it off in thirty years, and at the end of that time they would have magnificent roads, which would cost scarcely anything to keep in repair.*

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UNDERTAKERS' MONUMENTS.

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"Here lies John Trollope,
Who caused the stones to roll up,
When God Almighty took his soul up,
His body went to fill the hole up."

Another curious one, and which is evidently in memory of a blacksmith, is as follows,—

"My sledge and hammer lie declined,
My bellows, too, have lost their wind,
My fire 's extinct, my forge decay'd,
And in the dust my bones are laid.

My coals are spent, my iron gone,
My nails are drove, my work is done,
My fire-dried corpse here lies at rest,
My soul (smoke-like) soars to rest."

There seems to me a charm in these old churchyards that is lacking in our large cemeteries, where the eye is so frequently distressed by seeing monuments falling down, many broken, and others on the verge of decay, at least one-half of them appearing to be unsound, and the dates on the stones showing they have only been erected a few years; in fact, monuments erected during the last few years appear to be the very ones that are decaying, whereas those erected a score or more years ago (although dirty and discoloured, which is inevitable in our climate, more or less) are still as sound as when first put up. Why, I would ask, is this? Is the material deteriorated of late years, or is it the fault of the sculptor or mason who executes the work? I have studied this matter a good deal for some time, and have elicited many useful facts from those in the trade, and others, concerning it, and will endeavour to show what I deduce as the cause, and to suggest a remedy.

The material now to be obtained I believe to be as good, if not better, than ever, if properly selected, as, although the English climate is very trying, there is both stone and marble to be got that will resist it; and good granite, if polished, we know to be virtually everlasting, although this, of course, is very expensive for ordinary work; but the trade has of late years gone a great deal out of the hands of the sculptor and mason, to whom it properly belongs, and into those of undertakers and shopkeepers,—*i.e.*, the drapers' and mourning warehouses with undertaking combined, who, of course, know nothing whatever of the trade, their knowledge consisting in pocketing at least twenty per cent. of the total cost of the monument. And what do they do for this? Simply take the order for the monument from their customers and give it to the sculptor or mason to execute, and pocket this handsome percentage for doing what?—why, nothing at all. I am assured, on good authority, that on one of the monuments at Kensal Green Cemetery no less a sum than 200*l*. had been paid to the undertaker for commission; in another case the undertaker was regularly receiving fifteen per cent. on all works executed for or through him, and as the business was transacted through his foreman, he had five per cent. besides. Afterwards the foreman succeeded to his master's business, and he then not only required the fifteen and five per cent. both, but a further five per cent., making twenty-five per cent. commission, or one quarter of the total sum paid for each monument. And these instances could be multiplied, if needed, a hundredfold by those "behind the scenes."

Is it, then, very difficult to fathom the cause of the dilapidated and broken monuments that meet our eye on every side in the cemeteries? I think not. The mason saddled with this heavy incubus of commission, and with competition all round him, purchases the cheapest and most easily worked material that he can, without regard to durability. He naturally thinks that if the undertaker or shopkeeper has twenty per cent. for doing nothing, he at any rate is entitled to twenty per cent. for his trouble in carrying out the work, thus making forty per cent. profit to come out of the work,

and to gain this he accordingly puts in the cheapest work and material that will "pass" to pay himself. He feels no interest in the work, as he knows the undertaker or shopkeeper will get the credit (if there is any); therefore, all he has to look to is £. s. d., viz., how much he can get out of it; the common remark being, "Oh! anything will do; it is only an undertaker's job." Then afterwards, when the parties who have paid for the work find it is going to pieces, or is inferior to what they expected, they probably complain to the undertaker or shopkeeper whom they ordered it from, and who at once reply, "Oh! we can't help it, we only got it done for you to save you trouble; we don't get anything by it." They may, perhaps, then proceed to the sculptor or mason who really did it, and then, probably, the truth comes out, and they return home with a heartfelt wish that they had been wise in time and gone to the workman direct.

The remedy, then, I think, for this is plain. Let the public resist the cajolery of the undertaker's young man, who, as soon as the corpse is interred, and ofttimes before, brings them designs, and "wish to know what monument they are thinking of having," and "offer to get it done for them to save them trouble"; or will perhaps introduce a mason to them, whom they "can recommend," but which simply means one who will allow them commission. Let them, instead of this, give their order direct to a tradesman who does his own work, and I think we should soon see a marked improvement in the style and execution of work in the cemeteries; the sculptor or mason then has an incentive to do a fair work that it may recommend him in future, and there is then no second profit to pay. Of course, no really first-class firm will, as a rule, accept the work from an undertaker or shopkeeper, as they are well aware it is impossible for them to allow the heavy commission required, and to do a work that is satisfactory to themselves or their customers; but, in the few cases where they do so, the undertaker's commission is added to their price, and the work is, no doubt, then carried out as it should be, but at a considerably enhanced price to what it would have been if the parties ordering had done so first-hand instead of through the undertaker or draper. I cannot myself understand how it is that people of intelligence should be so simple as to expect that the undertaker or draper would trouble about getting their monument done for them if he did not get something out of it, and they may rely that, directly or indirectly, they have to pay pretty heavy for his very small services.

WANDERER.

LABOUR IN MELBOURNE.

SIR,—The letter of "One not Blessed with Incumbrances," in the *Builder* of April 15th last, has been read by me in Melbourne.

I am perfectly at a loss to understand why such a *bonâ fide* London tradesman as the writer of that letter is consents to lose his time, waste his energies, and be "wearied by overwork and bad debts," when the state of our labour market here offers so many and so great inducements to him and others like him.

I send you the *Argus* summary of this date (June 19th), and have marked the "Labour Market" article and the paragraph specially instructive to the writer of the letter alluded to.

I have been in practice here as an architect for more than a quarter of a century, and during all that time the occasions have been very few and far between on which a really skilled workman need have been one week out of work. Just now there is, and for twelve-months past there has been, a scarcity of tradesmen. Contractors will hardly take the trouble to tender for works, as their hands are so full. A few weeks ago I called for tenders for additions to a house about seven miles from here, and only one man thought it worth while to tender for it. I assure you there is no "patient misery" among tradesmen here, for they can and do pick and choose when, where, and for whom they will work, and they often refuse a job when the building is not conveniently near to their houses. Pray let your readers at home know as soon as possible the rates that skilled workmen of the various trades can command here, for the *Argus* rather understates than overstates the mark.

Many people just now are deterred from building in consequence of the paucity of tradesmen, their number being greatly below our requirements. The sooner we get a supply of good steady skilled operatives here the better for themselves and for all classes of the community. I speak from experience, and assure you I have now several buildings in abeyance for the reasons above mentioned. There is abundance of capital and enterprise here, and an ample field for thorough tradesmen, whether blessed with incumbrances or not.

F.R.I.B.A., and
Hon. Sec. for Melbourne.

The following is the quotation in question:—

Building Trades.—Plasterers from 10s. to 11s. per day; carpenters, 10s. per day; bricklayers, 11s. per day; plumbers, 10s. per day; joiners, 10s. per day; masons, 10s. per day; slaters, 12s. per day; labourers, from 6s. to 7s. per day; pick-and-shovel men, 6s. 6d. per day.

COMPETITION FOR THE GOVERNMENT OFFICES.

SIR,—When the Civil Service Estimates were moved on the 24th of last month, the First Commissioner of Works and Public Buildings said, in reply to Lord Elcho, that "some of the best architects declined to compete if it were an open competition, on the ground of the great expense of preparing designs."

As the expense will be the same, whether an open or a limited competition be adopted, it is clear, I think, that the real objection is solely to the open competition. Such a position is, it appears to me, so unworthy of the leaders of the profession that I should like, if you permit, to say a few words in support of Lord Elcho's strong recommendation of a public competition for the War and Admiralty Offices.

The excellent position which the seniors have acquired surely gives them the best chance of success, whether the limited or unlimited plan be adopted. What more can they desire? If they are afraid of the damaging effect of their possible defeat by some architect of inferior rank, the secrecy of mottoes to the designs will prevent the public record of their misfortune. In architecture, as in other things, public competition is an excellent means of keeping men up to the mark, and, in my own opinion, of advancing the art itself. There is no better test of high merit than success in it.

The position of "the best architects" has been obtained by public competition. Mr. Waterhouse was known only in a limited sphere until he won the Manchester Assize Courts competition. That building at once gave him his well-deserved rank. The late Mr. Street was thought to be a church architect only until he won that for the Royal Courts of Justice, when he immediately took full honours. And so of many others.

Will the Government, then,—permitted to tax the nation, bound to do all they can to promote and advance art in the most liberal manner possible, intrusted with a department for this special purpose,—lend themselves to this ungenerous attempt to confine the chance for this great prize to a favoured few? In the interest of our art it is to be hoped that Mr. Shaw-Lefevre will not listen to assertions based upon selfish motives, but will place all architects who feel they have the requisite experience to carry out a great public work on the same footing. The expense and uncertainty of the contest is sure to keep unsuitable and incompetent men out of it.

I have ventured thus to write because I am convinced that there is much more advantage in public than limited competition, and that the Government should do all they can to encourage our art in the most liberal manner possible, and without favour to one class or another. Who can say that an open competition may not be the means of making known a worthy successor of Wren, or Chambers, or Barry, or Street?

AUDI ALTERAM PARTEM.

THAMES COMMUNICATIONS.

SIR,—I have seen Mr. Trickett's letter [p. 160, *ante*], but in relation thereto would utter a word of censure; for although there have been numerous demonstrations of public feeling, and the necessity for means of communication is admitted, there is not that hearty co-operation between the East London and South London authorities that there should be. This, I suppose, arises from that pervading selfishness which puts local above general interests. While the committee of which Mr. Trickett is treasurer devotes itself to the main point of affirming the necessity for "means of communication," the authorities of Whitechapel take it upon themselves to assert that a low-level bridge at the Tower is *the* panacea for the evils that afflict the traffic of East and South London. A little lower down, the Limehouse District authorities, representing Shadwell, Wapping, Ratcliff, and Limehouse, favour a communication by way of tunnel; while lower down the river still, in Millwall and Poplar, satisfaction would be given by the institution of a system of ferries. Having regard to the furious opposition to a bridge scheme which would be encountered from the wharfingers of the Thames near London Bridge, it really appears expedient that the inhabitants of the districts concerned should make up their minds and agree to agitate for a tunnel and one or two steam ferries or floating bridges. Public opinion has been awakened to the necessity, but it is now time that the steps to be taken to relieve that necessity should be indicated.

OBSERVER.

"A CARD."

SIR,—I clip the following from a Welsh newspaper, suppressing name, address, &c.:—

MR. ——— ———, R.I.B.A.,
ARCHITECT,
OF ———, ———,

Begs to inform the Residents of ——— and Neighbourhood that he has opened commodious Offices at ——— BUILDINGS, ——— STREET, ———.

MR. ——— has been successful in all the important Competitions in ——— and vicinity for some years. Amongst other local premated designs being the ———, &c., and has also several large Contracts, which are being carried out under his supervision in this District.

All commands of his Clients will receive his Personal Attention; in addition to that of a Competent Staff who has been engaged in order to expedite all work that may be entrusted to him.

Clients may be supplied with Preliminary Drawings for approval. Dilapidations reported upon.

AN ASSISTANT WANTED.

The advertiser, if he be a member of the Royal Institute of British Architects, does not specify whether he belongs to the class of Associates or that of Fellows, and therein he resembles certain Associates of the Institute who habitually dub themselves "M.R.I.B.A." (initials which, I believe, are not recognised by the Institute), confident that the public do not know that there are two classes of professional members of the Institute. Is advertising in this way legitimate,—I will not say dignified? What would be thought of a solicitor or medical man who issued such an advertisement as the foregoing?

ONE OF THE PUBLIC.

MONUMENTAL.

PROFESSOR HOWALDT, of Brunswick, is now occupied upon a colossal figure of Germania, intended to form part of the Monument of Victory at Leipsic. The statue will not be cast, but will be executed in hammered copper, in which class of work the professor is said to have gained distinction. The attitude in which the figure is represented is typical of the armed neutrality of the Fatherland at the present time. Although considerable progress has been made with the work, its completion is not expected until towards the close of next year.

WHAT IS A BUILDING?

A CASE of some importance has been heard before Mr. Ellison at the Lambeth Police Court. Mr. Banister Fletcher, the district surveyor, contended that the erection, which was 19 ft. long, 12 ft. wide, and 14 ft. high to the apex, and which was enclosed at the back and at one end, was a building, and therefore subject to the rules of the Metropolitan Building Act. Mr. Fullagar, solicitor, appeared for the owners,—the St. James's Home for Inebriates,—and contended that it was not a building within the Act, and if it were, it was exempt, being 60 ft. from any other building. The case was adjourned.

On Wednesday in last week the magistrate said he felt compelled reluctantly to decide in favour of the district surveyor, and the order was made to amend the work as he required.

or Boatehaw, by the Erber,* hath the addition of Boathaw, or Boat haw, of near adjoining to an haw or yard, wherein of old time boats were made and landed from Downgate to be mended." The fire devoured the famous mariner's house shortly after the *Hind*, which had been fitted up as a banquet-hall, had been broken up. The name of Nelson is attached to several London streets and squares, and to more than a score of taverns and public-houses. There is one Drake-street, but not named after him, "for whose fame the ocean sea was not sufficient room."

THE BERLIN ROYAL THEATRE AND OPERA HOUSE.

The architectural changes consequent on the suggestions of the Government officials have been designed with a view to facilitate the immediate egress of the audiences in case of fire. They are now being carried out by Herr Hense, under the superintendence of Herr Persius. The complicated requirements of the modern stage are being duly kept in view. As in the other instances to which we have lately referred, the iron curtain forms a prominent feature in the proposed measures of safety. In both the houses named it is made of corrugated metal. Instructions have been given for a daily trial of the iron curtain to insure its being in working order. It has been found possible to let down the iron curtain of the Royal Theatre in sixteen or seventeen seconds, and to wind it up in two minutes.

In both houses additional entrances for the public have been constructed, and some seats have been taken away from near the entrances of the pit in order to make the egress more free. The stage has further been separated from the auditorium by massive walls and iron doors. To complete the isolation, such drains as may require to be laid down will be of iron, and will be provided with appliances to enable them to be closed in the event of fire, it being thus contemplated to prevent the passage of sparks which might cause a conflagration to spread.

The iron curtains have the following dimensions:—Opera House, 52 ft. 6 in. in width and 41 ft. in height; Royal Theatre, 39 ft. 6 in. in width and 39 ft. 6 in. in height.

The works at the Royal Theatre are in such a forward state that the theatre is expected to re-open for the season on August 25th.

PROPOSED SUBSTITUTION OF WOOD FOR STONE PAVEMENT IN COUNTY DUBLIN.

At last week's meeting of the Drumcondra Commissioners at Holly Park House, Mr. R. M'Mullen presiding, Mr. Leonard, C.E., read a report on the expediency of adopting some system of road covering other than macadamising. He said that he had given special consideration to the question of wood pavement, using Irish beech, of which an abundant supply could be had in the county Dublin, and in dealing with it he had considered four matters, namely, convenience, safety, durability, and cost. With regard to the first, all things being equal, wood pavement possessed advantages over any other kind, and was far easier and safer for horses than granite or asphalte. In places where wood pavement had failed, he believed the process of laying had been the cause of failure, or through the action of percolating water being overlooked. About 6,912 yards would have to be laid down, about 6 yards in width, giving an area of 41,472 square yards to be paved. The cost would be only about 10s. a yard, so that the total cost would be 20,736*l*. He recently saw in Birmingham wood pavements which had been laid down over fourteen years, and they were now just as good as new.

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> When God Almighty took his soul up,
> His body went to fill the hole up."

Another curious one, and which is evidently in memory of a blacksmith, is as follows,—

> "My sledge and hammer lie declined,
> My bellows, too, have lost their wind,
> My fire 's extinct, my forge decay'd,
> And in the dust my bones are laid.
>
> My coals are spent, my iron gone,
> My nails are drove, my work is done,
> My fire-dried corpse here lies at rest,
> My soul (smoke-like) soars to rest."

There seems to me a charm in these old churchyards that is lacking in our large cemeteries, where the eye is so frequently distressed by seeing monuments falling down, many broken, and others on the verge of decay, at least one-half of them appearing to be unsound, and the dates on the stones showing they have only been erected a few years; in fact, monuments erected during the last few years appear to be the very ones that are decaying, whereas those erected a score or more years ago (although dirty and discoloured, which is inevitable in our climate, more or less) are still as sound as when first put up. Why, I would ask, is this? Is the material deteriorated of late years, or is it the fault of the sculptor or mason who executes the work? I have studied this matter a good deal for some time, and have elicited many useful facts from those in the trade, and others, concerning it, and will endeavour to show what I deduce as the cause, and to suggest a remedy.

The material now to be obtained I believe to be as good, if not better, than ever, if properly selected, as, although the English climate is very trying, there is both stone and marble to be got that will resist it; and good granite, if polished, we know to be virtually everlasting, although this, of course, is very expensive for ordinary work; but the trade has of late years gone a great deal out of the hands of the sculptor and mason, to whom it properly belongs, and into those of undertakers and shopkeepers,—*i.e.*, the drapers' and mourning warehouses with undertaking combined, who, of course, know nothing whatever of the trade, their knowledge consisting in pocketing at least twenty per cent. of the total cost of the monument. And what do they do for this? Simply take the order for the monument from their customers and give it to the sculptor or mason to execute, and pocket this handsome percentage for doing what?—why, nothing at all. I am assured, on good authority, that on one of the monuments at Kensal Green Cemetery no less a sum than 200*l*. had been paid to the undertaker for commission; in another case the undertaker was regularly receiving fifteen per cent. on all works executed for or through him, and as the business was transacted through his foreman, he had five per cent. besides. Afterwards the foreman succeeded to his master's business, and he then not only required the fifteen and five per cent. both, but a further five per cent., making twenty-five per cent. commission, or one quarter of the total sum paid for each monument. And these instances could be multiplied, if needed, a hundredfold by those "behind the scenes."

Is it, then, very difficult to fathom the cause of the dilapidated and broken monuments that meet our eye on every side in the cemeteries? I think not. The mason saddled with this heavy incubus of commission, and with competition all round him, purchases the cheapest and most easily worked material that he can, without regard to durability. He naturally thinks that if the undertaker or shopkeeper has twenty per cent. for doing nothing, he at any rate is entitled to twenty per cent. for his trouble in carrying out the work, thus making forty per cent. profit to come out of the work,

and to gain this he accordingly puts in the cheapest work and material that will "pass" to pay himself. He feels no interest in the work, as he knows the undertaker or shopkeeper will get the credit (if there is any); therefore, all he has to look to is £. s. d., viz., how much he can get out of it; the common remark being, "Oh! anything will do; it is only an undertaker's job." Then afterwards, when the parties who have paid for the work find it is going to pieces, or is inferior to what they expected, they probably complain to the undertaker or shopkeeper whom they ordered it from, and who at once reply, "Oh! we can't help it, we only got it done for you to save you trouble; we don't get anything by it." They may, perhaps, then proceed to the sculptor or mason who really did it, and then, probably, the truth comes out, and they return home with a heartfelt wish that they had been wise in time and gone to the workman direct.

The remedy, then, I think, for this is plain. Let the public resist the cajolery of the undertaker's young man, who, as soon as the corpse is interred, and ofttimes before, brings them designs, and "wish to know what monument they are thinking of having," and "offer to get it done for them to save them trouble"; or will perhaps introduce a mason to them, whom they "can recommend," but which simply means one who will allow them commission. Let them, instead of this, give their order direct to a tradesman who does his own work, and I think we should soon see a marked improvement in the style and execution of work in the cemeteries; the sculptor or mason then has an incentive to do a fair work that it may recommend him in future, and there is then no second profit to pay. Of course, no really first-class firm will, as a rule, accept the work from an undertaker or shopkeeper, as they are well aware it is impossible for them to allow the heavy commission required, and to do a work that is satisfactory to themselves or their customers; but, in the few cases where they do so, the undertaker's commission is added to their price, and the work is, no doubt, then carried out as it should be, but at a considerably enhanced price to what it would have been if the parties ordering had done so first-hand instead of through the undertaker or draper. I cannot myself understand how it is that people of intelligence should be so simple as to expect that the undertaker or draper would trouble about getting their monument done for them if he did not get something out of it, and they may rely that, directly or indirectly, they have to pay pretty heavy for his very small services.

WANDERER.

LABOUR IN MELBOURNE.

SIR,—The letter of "One not Blessed with Incumbrances," in the *Builder* of April 15th last, has been read by me in Melbourne.

I am perfectly at a loss to understand why such a *bonâ fide* London tradesman as the writer of that letter is consents to lose his time, waste his energies, and be "wearied by overwork and bad debts," when the state of our labour market here offers so many and so great inducements to him and others like him.

I send you the *Argus* summary of this date (June 19th), and have marked the "Labour Market" article and the paragraph specially instructive to the writer of the letter alluded to.

I have been in practice here as an architect for more than a quarter of a century, and during all that time the occasions have been very few and far between on which a really skilled workman need have been one week out of work. Just now there is, and for twelve-months past there has been, a scarcity of tradesmen. Contractors will hardly take the trouble to tender for works, as their hands are so full. A few weeks ago I called for tenders for additions to a house about seven miles from here, and only one man thought it worth while to tender for it. I assure you there is no "patient misery" among tradesmen here, for they can and do pick and choose when, where, and for whom they will work, and they often refuse a job when the building is not conveniently near to their houses. Pray let your readers at home know as soon as possible the rates that skilled workmen of the various trades can command here, for the *Argus* rather understates than overstates the mark.

Many people just now are deterred from building in consequence of the paucity of tradesmen, their number being greatly below our requirements. The sooner we get a supply of good steady skilled operatives here the better for themselves and for all classes of the community. I speak from experience, and assure you I have now several buildings in abeyance for the reasons above mentioned. There is abundance of capital and enterprise here, and an ample field for thorough tradesmen, whether blessed with incumbrances or not.

F.R.I.B.A., and
Hon. Sec. for Melbourne.

The following is the quotation in question:—

Building Trades.—Plasterers from 10s. to 11s. per day; carpenters, 10s. per day; bricklayers, 11s. per day; plumbers, 10s. per day; joiners, 10s. per day; masons, 10s. per day; slaters, 12s. per day; labourers, from 6s. to 7s. per day; pick-and-shovel men, 6s. 6d. per day.

COMPETITION FOR THE GOVERNMENT OFFICES.

SIR,—When the Civil Service Estimates were moved on the 24th of last month, the First Commissioner of Works and Public Buildings said, in reply to Lord Elcho, that "some of the best architects declined to compete if it were an open competition, on the ground of the great expense of preparing designs."

As the expense will be the same, whether an open or a limited competition be adopted, it is clear, I think, that the real objection is solely to the open competition. Such a position is, it appears to me, so unworthy of the leaders of the profession that I should like, if you permit, to say a few words in support of Lord Elcho's strong recommendation of a public competition for the War and Admiralty Offices.

The excellent position which the seniors have acquired surely gives them the best chance of success, whether the limited or unlimited plan be adopted. What more can they desire? If they are afraid of the damaging effect of their possible defeat by some architect of inferior rank, the secrecy of mottoes to the designs will prevent the public record of their misfortune. In architecture, as in other things, public competition is an excellent means of keeping men up to the mark, and, in my own opinion, of advancing the art itself. There is no better test of high merit than success in it.

The position of "the best architects" has been obtained by public competition. Mr. Waterhouse was known only in a limited sphere until he won the Manchester Assize Courts competition. That building at once gave him his well-deserved rank. The late Mr. Street was thought to be a church architect only until he won that for the Royal Courts of Justice, when he immediately took full honours. And so of many others.

Will the Government, then,—permitted to tax the nation, bound to do all they can to promote and advance art in the most liberal manner possible, intrusted with a department for this special purpose,—lend themselves to this ungenerous attempt to confine the chance for this great prize to a favoured few? In the interest of our art it is to be hoped that Mr. Shaw-Lefevre will not listen to assertions based upon selfish motives, but will place all architects who feel they have the requisite experience to carry out a great public work on the same footing. The expense and uncertainty of the contest is sure to keep unsuitable and incompetent men out of it.

I have ventured thus to write because I am convinced that there is much more advantage in public than limited competition, and that the Government should do all they can to encourage our art in the most liberal manner possible, and without favour to one class or another. Who can say that an open competition may not be the means of making known a worthy successor of Wren, or Chambers, or Barry, or Street?

AUDI ALTERAM PARTEM.

THAMES COMMUNICATIONS.

SIR,—I have seen Mr. Trickett's letter [p. 160, *ante*], but in relation thereto would utter a word of censure; for although there have been numerous demonstrations of public feeling, and the necessity for means of communication is admitted, there is not that hearty co-operation between the East London and South London authorities that there should be. This, I suppose, arises from that pervading selfishness which puts local above general interests. While the committee of which Mr. Trickett is treasurer devotes itself to the main point of affirming the necessity for "means of communication," the authorities of Whitechapel take it upon themselves to assert that a low-level bridge at the Tower is *the* panacea for the evils that afflict the traffic of East and South London. A little lower down, the Limehouse District authorities, representing Shadwell, Wapping, Ratcliff, and Limehouse, favour a communication by way of tunnel; while lower down the river still, in Millwall and Poplar, satisfaction would be given by the institution of a system of ferries. Having regard to the furious opposition to a bridge scheme which would be encountered from the wharfingers of the Thames near London Bridge, it really appears expedient that the inhabitants of the districts concerned should make up their minds and agree to agitate for a tunnel and one or two steam ferries or floating bridges. Public opinion has been awakened to the necessity, but it is now time that the steps to be taken to relieve that necessity should be indicated.

OBSERVER.

"A CARD."

SIR,—I clip the following from a Welsh newspaper, suppressing name, address, &c.:—

MR. ——— ———, R.I.B.A.,
ARCHITECT,
OF ———, ———,

Begs to inform the Residents of ——— and Neighbourhood that he has opened commodious Offices at ——— BUILDINGS, ——— STREET, ———.

MR. ——— has been successful in all the important Competitions in ——— and vicinity for some years. Amongst other local premated designs being the ———, &c., and has also several large Contracts, which are being carried out under his supervision in this District.

All commands of his Clients will receive his Personal Attention; in addition to that of a Competent Staff who has been engaged in order to expedite all work that may be entrusted to him.

Clients may be supplied with Preliminary Drawings for approval. Dilapidations reported upon.

AN ASSISTANT WANTED.

The advertiser, if he be a member of the Royal Institute of British Architects, does not specify whether he belongs to the class of Associates or that of Fellows, and therein he resembles certain Associates of the Institute who habitually dub themselves "M.R.I.B.A." (initials which, I believe, are not recognised by the Institute), confident that the public do not know that there are two classes of professional members of the Institute. Is advertising in this way legitimate,—I will not say dignified? What would be thought of a solicitor or medical man who issued such an advertisement as the foregoing?

ONE OF THE PUBLIC.

MONUMENTAL.

PROFESSOR HOWALDT, of Brunswick, is now occupied upon a colossal figure of Germania, intended to form part of the Monument of Victory at Leipsic. The statue will not be cast, but will be executed in hammered copper, in which class of work the professor is said to have gained distinction. The attitude in which the figure is represented is typical of the armed neutrality of the Fatherland at the present time. Although considerable progress has been made with the work, its completion is not expected until towards the close of next year.

WHAT IS A BUILDING?

A CASE of some importance has been heard before Mr. Ellison at the Lambeth Police Court. Mr. Banister Fletcher, the district surveyor, contended that the erection, which was 19 ft. long, 12 ft. wide, and 14 ft. high to the apex, and which was enclosed at the back and at one end, was a building, and therefore subject to the rules of the Metropolitan Building Act. Mr. Fullagar, solicitor, appeared for the owners,—the St. James's Home for Inebriates,—and contended that it was not a building within the Act, and if it were, it was exempt, being 60 ft. from any other building. The case was adjourned.

On Wednesday in last week the magistrate said he felt compelled reluctantly to decide in favour of the district surveyor, and the order was made to amend the work as he required.

STATE OF THE LABOUR MARKET.

NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.—The following is a comparative statement showing the Hours worked per Week, and the Rate of Wages per Hour, in the various Branches of the Building Trade in the undermentioned Towns.—W. Knox, Secretary.

Abbreviations:—dy, day; lt-dk, light to dark; s, shop; b, building; wk, week; a, average; tm, time; t s, time sheet; t, town; c, country. Towns marked * have not made any return since January, 1882.

Town.	Masons.				Bricklayers.				Carpenters and Joiners.				Plasterers.				Slaters.				Plumbers.				Painters.				Masons' Labourers.				Bricklayers' Labourers.				Plasterers' Labourers.			
	Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.		Summer.		Winter.	
	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.	Hours worked per Week.	Rate of Wages per Hour.
Aberdeen	51	6	45	6	no	ne em	ploy	ed	51	6	45	6	51	6½	40	6½	51	6½	40	6½	51	7	51	7	51	6½	39	6½	51	4½	45	4½	..	not gi	ven	..	54	4½	40	4½
Ashton-under-Lyne	54½	8	lt dk	8	54½	8	lt dk	8	54½	7½	47	7½	54½	8	lt dk	8	54½	8	lt dk	8	54½	8	lt dk	8	54½	7½	lt dk	7	49½	5	lt dk	5	54½	5 to 5½	lt dk	5 to 5½	54½	5	lt dk	5
Alderley Edge	49½	8½	42½	8½	54½	8	47	8	54½	30/wk.	54½	30/wk.	54½	8	54½	8	54½	7	47	7	54½	7½	49½	7½	54½	7	49½	7	49½	5½	42½	5½	54½	5½	47	5½	54½	5½	54½	5½
Altrincham	49½	8	48½	8	54½	8	44	8	54½	8	47	8	54½	8	47	8	54½	7½	47	7½	54½	8	47	8	54½	7	44	7	..	..	..	..	54½	5½	44	5½	54½	5½	47	5½
Bradford	49½	6½ to 7	45	6½ to 7	49½	6½ to 7	45	6½ to 7	49½	6 to 7	49½	6 to 7	49½	7	47	7	49½	6½ to 7	42	6½ to 7	49½	6½	49½	6½	52	6½ to 7	lt dk	6½ to 7	49½	4½ to 5	45	4½ to 5	49½	4½ to 5	45	4½ to 5	49½	5	47	5
Bristol	54	6 to 7½	48	6 to 7½	54	6 to 7½	48	6 to 7½	54	6 to 7	48	6 to 7	54	7	48	7	54	7	48	7	54	7	48	7	54	6 to 7	48	6 to 7	54	4 to 5	48	4 to 5	54	4 to 5	48	4 to 5	54	4 to 5	48	4 to 5
Beverley	55½	7	50	7	55½	6½	50	6½	55½	6	55½	6	55½	7	50	7	..	not gi	ven	..	55½	7	50	7	..	not gi	ven	..	55½	4½	50	..	55½	4½	50	..	55½	4½	50	..
*Barnsley	50	7½	a44½	7½	50	7½	a44½	7½	50	7½	50	7½	50	7	45	7½	50	7	44	7	50½	7½	50½	7½	49	7½	46	7½	50	5	44½	5	50	5	44½	5	50	5	45	5
Barrow	54	7½	a46½	7½	54½	8½	a48½	8½	54	7½	49	7½	54	7½	47	7½	54	7	47	7	54	7½	54	7½	54	7½	49	7½	54	24/wk	a46½	20/8 w	54½	6	a48½	6	54	24/wk	47	21/wk
Bolton	48½	8½	45½	8½	49½	9	47	9	54½	8	49½	8	52	8	41½	8	49½	5/6 day	lt dk	5/6 day	52	8	47	8	52½	7	39	7	48½	5½	45½	5½	49½	6	47	6	52	6	41½	6
Birmingham	54	8½	47½	8½	54	7½	47½	7½	54	7½	47½	7½	54	7½	47½	7½	..	piece	wrk	..	56½	7	50½	7	56½	7	50½	7	54	5	47½	5	54	5	47½	5	54	5	47½	5
*Blackburn	49	8½	44	8½	49	36/wk	44	33/wk	49	7½	49	7½	49	36/wk.	44	33/wk.	49	8½	44	8½	49	8½	49	8½	54	8	46½	8	49	20/ 22/	44	18/ 20/	49	24/wk	44	22/wk	49	26/wk	44	24/wk
Cambridge	56½	7 to 7½	50½	7 to 7½	56½	6 to 7	50½	6 to 7	56½	6 to 7	50½	6 to 7	56½	7 to 8	50½	7 to 8	60 to 65	6½ to 7	piec	e work	56½	6½ to 7	50½	6½ to 7	56½	6 to 7	50½	6 to 7	56½	4	50½	4	56½	3½ to 4	50½	3½ to 4	56½	3½ to 4	50½	3½ to 4
Coventry	56½	7½	51	7½	56½	7	51	7	56½	7	51	7	56½	7	51	7	56½	7	51	7	56½	7	51	7	56½	6¾	51	6¾	56½	5	51	5	56½	4¾	51	4¾	56½	4¾	51	4¾
*Canterbury	60–70	6½	60	6½	60-70	6 & 6½	54	6 & 6½	60–70	6 to 6½	60	6 to 6½	65	7½	54	7	60–70	6½	54	6½	60–70	6½	60	6½	60–70	5½	54	5½	60-70	4	54	4	60-70	3¾	54	3¾	60-70	4	54	4
Cardiff	54	7½	50½	7½	54	7½	50½	7½	54	7½	50½	7½	54	7½	50½	7½	54	7½	50½	7½	54	7 to 7½	50½	7 to 7½	54	6½ to 7	50½	6½ to 7	54	4 to 5	50½	4 to 5	54	4 to 5	50½	4 to 5	54	4 to 5	50½	4 to 5
*Cirencester	56½	5½	56½	5½	56½	6	56½	6	56½	5½	56½	5½	56½	6	56½	6	56½	6	56½	6	56½	6	56½	6	56½	5	56½	5	56½	3¾	56½	3¾	56½	3¾	56½	3¾	56½	3¾	56½	3¾
*Cheadle	49½	8	41½	8	49	8	45	8	54½	7½	52	7½	54½	7	47	7	54½	7	45	7	54½	7½	52	7½	54½	7	47	7	49½	5½	41½	5½	49½	5½	45	5½	54½	5	47	5
*Chichester	58	7	47	7	58	6	47	6	58	6	47	6	58	6	47	6	58	6	47	6	58	8	47	8	58	6	47	6	58	4	47	4	58	4	47	4	58	4	47	4
Crewe	55½	7¾	55½	7¾	55½	7¾	55½	7¾	55½	7	55½	6/ dy.	55½	6/ dy.	55½	6/ dy.	55½	7½	55½	7½	55½	32/wk	55½	32/wk	55½	7	55½	7	55½	4¾	55½	4¾	55½	4¾	55½	4¾	55½	5	55½	5
*Chatham	56½	7½ to 8	54	7½ to 8	56½	7 to 8	54	7 to 8	56½	7 to 7½	54	7 to 7½	..	..	..	..	..	..	..	..	56½	7 to 7½	54	7 to 7½	56½	6½ to 7	54	6½ to 7	56½	4½	54	4½	..	..	..	..	..	..	..	..
*Chorley	48½	8½	..	..	54½	8½	..	..	54½	7½	..	..	54½	7	..	..	54½	7	..	..	54½	7½	47	7½	54½	7	47	7	48½	6	..	..	54½	6½	..	..	54½	5½	..	..
Carlisle	51	6½	44½	6½	51	6½	44½	6½	54	6	54	6	54	6¾	51	6¾	54	6½	44½	6½	54	7¼	54	7¼	54	6½	40	6½	51	4¼	44½	4¼	51	4¼	44½	4¼	54	5	54	5
Crieff	51	6	45	6	..	..	..	..	51	5	40	5	51	7	40	7	60	6	45	6	51	6	51	6	57	6	41	6	51	5	45	4	..	..	..	..	..	..	..	..
Croydon	61	8½	50	8½	61	8½	50	8½	61	8½	50	8½	61	9	50	9	..	piece	wrk	..	61	9	50	9	61	7½	41	7½	61	6	50	6	61	5½	50	5½	61	6	50	6
Cupar-Fife	51	5½	45	5½	..	..	..	..	51	5 to 6	51	5 to 6	51	..	41	..	51	5 to 6	41	5 to 6	51	5½ to6½	51	5½ to6½	57	5½ to6½	41	5½ to6½	51	3½ to 4	41	3½ to 4	..	..	..	..	51	5 to 6	41	5 to 6
Dover	54	8	54	8	56½	7½	55	7½	56½	7½	54	7	56½	7½	56½	8	56½	8	54	8	54	8	54	8	56½	6	56½	6	54	4½	54	4½	56½	4½	55	4½	56½	5	56½	5
Doncaster	54	7	a44½	7	54	7	a44½	7	54	7	47½	7	54	7	a44½	7	54	7	a44½	7	54	7	47½	7	54	6	a44½	6	54	4½ to 5	a44½	4½ to 5	54	4½ to 5	a44½	4½ to 5	54	4½ to 5	a44½	4½ to 5
Droylsden	49½	8	47	8	54½	8	47	8	54½	7½	47	7½	54½	7½	47	7½	54½	8	47	8	54½	7½	47	7½	..	not gi	ven	..	49½	5½	47	5½	54½	5	47	5	54½	5½	47	5½
Devizes	59	5½ to 7	57½	5½ to 7	59	5 to 6	57½	5 to 6	59	5 to 5½	59	5 to 5½	59	5½ to 6	57½	5½ to 6	59	5½ to 6	57½	5½ to 6	59	6	57½	6	59	5 to 6	57½	5 to 6	59½	3 to 3½	57½	3 to 3½	59	3 to 3½	57½	3 to 3½	59	3 to 3½	57½	3 to 3½
Dorchester	65	6	48	6	65	5½	48	5½	65	5½	48	5½	65	5½	48	5½	65	5½	48	5½	60	6	48	6	60	5½	48	5½	65	4	48	4	65	3½	48	3½	65	3½	48	3½
Derby	56	7½	50½	7½	56	7½	50½	7½	56	7½	56	7½	56	7½	50½	7½	56	7½	50½	7½	56	7½	50½	7½	56	7	47½	7	56	5	50½	5	56	4½	50½	4½	56	5½	50½	5½
Dudley	54	7	51½	7	54	6½	51½	6½	54	6½	53	6½	54	7	51½	7	54	7	51	7	54	7½ to 8	51	7½ to 8	54	6 to 6½	52½	6 to 6½	54	4	51½	4	54	4	51½	4	54	4½	51½	4½
*Durham	49½	7½	..	..	49½	7½	..	..	53	6¾	53	6¾	53	7½	53	7½	49½	7¼	..	..	53	7	53	7	53	7 to 8	..	..	49½	4¾	..	..	49½	4¾	..	..	..	..	..	..
Darlington	49½	7¾	44½	7¾	49½	7½	44½	7½	50	7	50	7	49½	7½	44½	7½	53	30/ wk	44½	30/ wk	53	32/wk	..	..	53	6½	40	6½	49½	5½	44½	5½	49½	5½	44½	5½	49½	5	44½	5½
Dalkeith	51	6 to 6½	42	6 to 6½	56	6½	42	6½	51	6½	42	6½	51	7	42	7	51	7	42	7	51	7	42	7	51	6½	40	7	51	17/wk	45	17/wk	56	4	42	4	51	20/wk	40	17/wk
Dunse	51	6	40	6	..	..	..	..	51	6	43	6	51	6	40	6	51	6	40	6	51	6½	51	6½	51	7	40	7	51	4	40	4	..	..	..	..	51	4	40	4
Dundee	...	not gi	ven	..	..	not gi	ven	..	..	not gi	ven	..	..	not gi	ven	..	..	not gi	ven	..	..	not gi	ven	..	..	51	6½	40	6½	..	not gi	ven	..	..	not gi	ven	..	..	not gi	ven	..
Eccles	49½	8	lt dk	8	54½	8 to 8½	lt dk	8 to 8½	54½	7 to 8	lt dk	7 to 8	54½	7 to 8	lt dk	7 to 8	54½	7½	lt dk	7½	54½	8	lt dk	8	54½	7½	lt dk	7	49½	5	lt dk	5	54½	5 to 6	lt dk	5 to 6	54½	5 to 5½	lt dk	5 to 5½
Edinburgh	51	6½	a45	6½	51	7	a42	7	51	6½	45b5lk	6½	51	6½	a42	6½	51	7	45	7	51	6½	46	6½	51	7	39	7	51	4½	a45	4½	51	5	a42	5	51	5	a42	5
Folkestone	56½	7 to 8	51½	7 to 8	56½	7 to 7½	51½	7 to 7½	56½	7 to 7½	56½	7 to 7½	56½	7½ to 9	56½	7½ to 9	..	..	..	..	56½	8	56½	8	66½	6½	51½	6½	56½	4½ to 5	51½	4½ to 5	56½	4½ to 5	51½	4½ to 5	56½	4½ to 5	51½	4½ to 5
Glasgow	51	6½	41	6½	51	8	45	8	51	7	45	7	51	6½	41	6½	51	7	45	7	51	7	45	7	56	7	45	7	51	4½	41	4½	51	4½	45	4½	51	5	41	5
Greenock	51	6½	44	6½	51	7	44	7	51	7	51	7	51	7½	39	7½	51	7	45	7	51	..	51	..	56	7	40	7	51	5	44	5	51	5	44	5	51	20/wk	39	20/wk
Guildford	56½	7½ to 8	50½	7½ to 8	56½	7 to 7½	50½	7 to 7½	56½	7	50½	7	56½	8	50½	8	..	piece	wrk	..	56½	8	50½	8	56½	6½	50½	6½	56½	5	50½	5	56½	4½	50½	4½	56½	5	50½	5
Gloucester	56½	6½	50½	6½	56½	7	50½	7	56½	6½	56½	6½	56½	6½	..	6½	56½	6½	50½	6½	56½	7	56½	7	56½	6	45	6	56½	3¾	..	3¾	56½	3¾	..	3¾	56½	3¾	..	3¾
Helensburgh	51	6½	45	6½	51	7	45	7	51	7	45	7	51	7	45	7	51	7	45	7	51	7	45	7	60	7 to 7½	45	7	51	4½	45	4½	51	4½	45	4½	51	5	45	5
Huddersfield	52½	7½	42	7½	52½	7½	42	7½	50	7	50	7	50	7½	50	7½	53	7	53	7	52½	7	52½	7	53½	6½	..	..	52½	5	42	5	52½	5	42	5	50	5¾	50	5¾
Holmfirth	50	32/wk	..	..	..	..	..	..	50½	6 to 6½	lt dk	..	..	..	..	..	..	..	..	..	50½	..	..	..	..	..	..	..	50	22/ 24/	..	..	..	..	..	..	..	..	..	..
*Hartford	55½	6 to 7	53	6 to 7	55½	7	53	7	55½	6 to 7	53	6 to 7	55½	8½	53	8½	55½	7	53	7	55½	6 to 7	53	6 to 7	55½	6 to 7	53	6 to 7	55½	4½	53	4½	55½	5½	53	5½	55½	5½	53	5½
*Halifax	49½	34/wk	..	32/wk	49½	34/wk	..	32/wk	50	7	50	7	50	7½	..	..	50	7½	..	..	50	7½	50	..	..	..	..	..	49½	22/wk	..	21/wk	49½	22/wk	..	21/wk	..	..	..	..
Hull	53	7½	47	7½	53		47		53		47	7	53	7	47	7	53	7	47	7	53	8	47	8	53	7	47	7	53	5½	47	5½	53	5½	47	5½	53	5½	47	5½
Hastings and St. Leonards-on-Sea	56½	8	50½	8	56½	7	50½	7	56½	7	50½	7	56½	8	50½	8	..	piece	wrk	..	56½	8	50½	8	56½	6½	50½	6½	56½	5	50½	5	56½	5	50½	5	56½	5	50½	5
Hamilton	51	6½	45	6½	56	8	45	8	51	6	46	6	51	7	46	7	51	6½	46	6½	51	5½ to 7	51	5½ to7	56	7	45	7	51	4½	45	4½	56	5½	45	5½	51	5	46	5

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GLASGOW INSTITUTE OF ARCHITECTS.

The members of the Glasgow Institute of Architects held their annual excursion on the 3rd inst., the place of rendezvous being Dunfermline. Amongst those who availed themselves of the day's outing were Messrs. James Sellars, vice-president; John Baird, past-president; Campbell Douglas, past president; William Laiper, F.R.I.B.A.; Alexander Petrie, T. L. Watson, John M'Lean, William Forrest Salmon, F.R.I.B.A.; James Morris, A.R.I.B.A.; and William M'Lean, secretary. The party arrived in Dunfermline, having travelled by rail, at 11·45, and were met by Mr. G. Robertson, F.S.A., Scot., and Mr. A. Blair. They first visited the Abbey and Palace ruins, spending a good deal of time in the study of the details of the architecture. Some of the members of the party seemed to be much struck with the fine specimens of Anglo-Norman and Gothic architecture which are to be met with in connexion with the old Abbey Church. In the course of the day the excursionists drove to Pitfirrane, Broomhall (the seat of the Earl of Elgin), Rosyth Castle, and Inverkeithing. On returning to Dunfermline, the company dined in the City Arms Hotel.

THE SELECTED DESIGN FOR THE GLASGOW MUNICIPAL BUILDINGS.

Mr. W. Young, the author of the design bearing the motto "Viola," has been entrusted with the execution of these buildings, which are estimated to cost 250,000*l*. (Inclusive of internal furniture, decorations, &c. The *Scotsman* puts the total expenditure at 500,000*l*). The buildings, which are designed in the Renaissance style of architecture, will have frontages to George-square, George-street, John-street, and Cochrane-street. The principal elevation is towards George-square. The central portion forms the approach to the quadrangle, over which is the Council Chamber, emphasised by coupled Corinthian columns, backed by pilasters and surmounted by an upper order of columns, crowned by a pediment. This pediment has 60 ft. of frontage, and the apex rises 96 ft. above the street level, while on each side of it springs a belfry tower rising about 20 ft. higher. The entrance to the quadrangle is immediately below the Council Chamber, as is also the main staircase on each side leading to the floors above. In approaching the quadrangle there is a spacious loggia, having three wide archways. The central archway, intended for carriages, is 25 ft. in height, by 12 ft. in width. One on each side, 17 ft. high, in a corresponding style, forms an access to each of the principal staircases. Over the Council Chamber are the upper and saloon stories, which are lighted from the roof. The two under stories of this, as well as the other fronts, are mainly faced with rusticated stonework. In relief of this massive part of the structure are coupled Ionic columns and pilasters, between which the windows are placed. The grand tower rises, behind the central pediment, to a height of 190 ft., surmounting the apex of it by 96 ft. At the base, which is 35 ft. square, and for some 20 ft. above the apex of the pediment, the treatment of the tower is plain rustic masonry without openings. On the top of this there are two stages formed of Ionic pillars, above which runs a colonnade of pillars of the same character. The colonnade is about 14 ft. in diameter, and is capped by an elongated dome of stone. The central front projects about 7 ft. beyond the line of the building, and between it and the wings on either side is a recess forming a screen. At the wings, which, like the front, also project beyond the screen, are towers rising some 48 ft. above the front balustrade. The George-street façade has received nearly as much attention from the architect as the principal elevation. It may be mentioned that generally all round the block the third floor is architecturally emphasised. In this front the banqueting-hall is thus represented with a double row of massive Corinthian pillars, supporting a handsome entablature, surmounted by a balustrade. The wings here, as in the other fronts, are formed by a repetition of the tower front in George-square, and are similarly treated. In order still further to secure harmony of design, a screen is introduced between the wing towers and the centre. The leading feature of the John-street elevation is the Dean of Guild-court, which is placed in the third floor. On this side the design corresponds with that on George-square, but the details are of a much simpler character. Down this street are the gas and water offices, with handsome entrances. The centre is surmounted by a plain pediment, flanked with balustrades, along the whole length of the edifice. In the Cochrane-street façade the committee-rooms on the third floor are defined by a repetition of the Corinthian pillars rising over the basement story, and carrying entablature, cornice, and balustrade and turreted belfries at the ends. Piercing this front is a carriage-entrance, 22 ft. in height by 10 ft. in width. The elevations to George-square, George-street, and Cochrane-street, are enriched by groups of statuary. In George-square, including those in the tower, there are 27; in George-street, 24; and in Cochrane-street, 18; while John-street, being mainly occupied with business offices, receives a simple treatment which does not require their aid. The pediment in the central front at George-square bears emblematic groups in relief representing Britain and the Arts and Sciences. On the quadrangle fronts, which form an interesting feature of the building, great care has been bestowed. The general treatment is strictly in harmony with that of the street elevations,—an Ionic base surmounted by Corinthian pillars,—but the details are less ornate. In regard to the internal arrangements, two spacious staircases lead to the Council-chamber and the Banqueting-hall. The dimensions of the chamber are 65 ft. by 30 ft., with a recess in the centre, giving a width at that point of 40 ft. The windows are all on one side, but as there is a circular dome into the open air, there will be an abundant supply of light. In size the hall is 103 ft. by 54 ft., and it has a circular roof 50 ft. high, while connected with it are seven saloons for the reception of guests, &c. It may be mentioned that the roof-line of the building is 7 ft. higher than that of the General Post Office, and that the tower is 55 ft. higher than that of the Merchants' House, the two principle structures at present in the square.

GLASGOW MUNICIPAL BUILDINGS COMPETITION.

At a meeting of the Committee on New Municipal Buildings, Glasgow, held on the 27th of July, Mr. William Young, the author of the design marked "Viola," was introduced, and the town clerk reported that, under the remit made to him at the last meeting of the committee, he had met with Mr. Young, and had fully discussed the conditions under which his appointment as architect of the proposed municipal buildings should be made. After fully considering these conditions, it was unanimously agreed that Mr. Young should be appointed architect, subject to the following conditions:—

1. That he shall receive, in respect of his whole professional services and expenses as architect, a commission of five per cent. on the actual cost of the works executed from his designs and under his superintendence, but excluding from such costs salaries and allowances to clerks of works, measurers, and other outlays and payments which, by the practice of the profession, are excluded in fixing architects' commission, and that the amount of such commission shall be paid by instalments of the amounts after specified, viz.:—

For the first year	£3,500	0	0
For the second year	2,500	0	0
For the third year.....	2,000	0	0
For the fourth year	2,000	0	0
For the fifth year	2,000	0	0
	£12,000	0	0

the said payments to be made half-yearly at Martinmas and Whitsunday in each year till the work is completed,—which completion, it is assumed, will not extend beyond five years from the present date. On the work being completed, Mr. Young shall receive whatever balance may be due and payable to him at the time when the building is handed over to, and taken possession of by, the Corporation.

2. That, in addition to the commission above specified, he shall receive from the Corporation repayment of the railway fares paid by him in travelling between London and Glasgow in relation to the municipal buildings, but no further or other charges of any kind.

3. That he shall, with the approval of the magistrates and Council, appoint an efficient clerk of the works, whose salary shall be paid by the Corporation.

4. That he shall submit to the magistrates and Council the names of three measurers resident in Glasgow, and the Magistrates and Council shall select and appoint one of the three whose names are so submitted, to act as measurer of the said buildings, and the remuneration of such measurer shall be paid by the Magistrates and Council.

5. That the Magistrates and Council shall be at liberty, and power is hereby reserved to them, from time to time, to ask advice from the City Architect or any other architect or professional adviser on all points or matters on which the Corporation may desire to be advised, both as to the design and mode of execution of the work, and to represent to Mr. Young their views and wishes in regard thereto, and he shall, so far as practicable, give effect to such views and wishes.

6. In the event of any difference of opinion arising between the Magistrates and Council and Mr. Young, in regard to any matter connected with the proposed building, the same shall be referred, at the instance of either of the parties, to Mr. Charles Barry, architect, London, whom failing, to the President for the time being of the Royal Institute of British Architects, whose decision shall be final and conclusive, and shall not be subject to review by any court or other tribunal.

Mr. Young expressed himself satisfied with the arrangements above set forth, and it was agreed that the same should be reported to the Magistrates and Council, and, after being confirmed, should be officially communicated to and accepted by Mr. Young. The City Chamberlain was instructed to make payment, in terms of the seventh condition of the fina competition, of 150*l*. to each of the ten com petitors. Mr. Young was informed that the Corporation are desirous of having the buildings proceeded with without delay, and the committee remitted to the City Chamberlain to warn away the tenants on the property at present on the site, and to Mr. Carrick to have the buildings taken down, and the materials disposed of as early as possible.

The Lord Provost, at a meeting of the Town Council on the 7th, in moving the adoption of the minutes, hoped it would go forth throughout the land that this competition was conducted on the most honourable principles. The minutes also showed with what carefulness the committee had proceeded to ascertain whether Mr. Young was altogether competent for the work to be performed, and he thought the Council would be satisfied they had the utmost reason to believe that Mr. Young was a gentleman into whose hands they could with perfect safety entrust these great buildings.

Mr. Martin said he thought the Town Council should keep the appointment of measurers in its own hands. It was not to be supposed that a stranger, comparatively speaking, should have a thorough knowledge of the measurers of Glasgow.

The Lord Provost thought it right to say that Mr. Barry and Mr. Young met for the first time in London. They had never seen each other before. Mr. Barry had heard of Mr. Young by name, but he had never seen him. The same remark held good with regard to Mr. Carrick.

The minutes were approved.

The Technological, Industrial, and Sanitary Museum of New South Wales.—The Colonial Government are making rapid progress with the organisation of this museum, which has now been permanently established in the Garden Palace at Sydney, the building in which the International Exhibition of 1879 was held. Arrangements are now being made for the shipment of contributions to the museum from manufacturers in this country, which, for the most part, consist of sanitary appliances and articles connected with building. These contributions are being forwarded to Sydney free of cost by the Government, on the recommendation of the British Committee. This committee have issued a circular, in which they say that "large numbers of houses are being erected in the city of Sydney and other cities and towns of the colony,—in one suburb alone six hundred houses having been built last year. The authorities are paying great attention to sanitary matters, and the principal object of the Government in establishing and maintaining the Museum is to provide a means whereby the Colonists may become acquainted with improved apparatus and appliances for building and domestic purposes." Manufacturers and others wishing to avail themselves of the opportunity of sending specimens, models, plans, books, illustrated catalogues, &c., should apply to Mr. Mark H. Judge, 8, Park Place-villas, Paddington, the acting member of the British Committee, for the necessary forms.

OBITUARY.

Mr. Edward L. Paraire, Architect.—We have to record the death of this gentleman, which took place at the age of 56, on the 1st inst., at 38, Mornington-crescent. Mr. Paraire was of a French family, but was naturalised in this country. His name was last before the public in connexion with an action he brought against the owners of the plot of land in Leicester-square, afterwards occupied by a panorama, the particulars of which we gave at the time. For some years he was in partnership with Mr. Finch Hill, during which period the firm executed a number of buildings, including the Britannia Theatre, the Holborn Theatre (the Duke's), the Philharmonic (Islington), the Oxford Music-hall, the Royal Cambridge Music-hall; the Presbyterian Church, Camden Park-road; the Baptist Chapel, City-road; the Club-room, Lord's Cricket Ground; Royal Oak, Bayswater, and many other taverns. Since the termination of the partnership he had prepared designs for the London and County Bank about to be erected at the corner of New Oxford-street, not yet commenced. The "Horseshoe," Tottenham-court-road, is also one of his works.

THE METROPOLITAN BOARD OF WORKS AND LONDON THEATRES.

The Metropolitan Board of Works have been successful in the first case in which they have put in force the powers conferred upon them by the Metropolis Management and Building Act (Amendment) 1878. This was with regard to the Lyceum Theatre, upon the owner of which the Board served notice requiring him to make certain alterations. The owner appealed, and the question then went to arbitration, Sir Henry A. Hunt, C.B., being the arbitrator appointed by the Home Secretary. After hearing the evidence on both sides, and making two inspections of the theatre, the arbitrator recently made an award by which he confirmed the principal requisitions made by the Board. The most important of these requisitions are the entire reconstruction of the gallery staircase in Exeter-street, which is very defective in some particulars, the carrying up of the proscenium-wall above the proscenium opening and through the roof, and the separation of the carpenter's shop above the auditorium from the audience by fire-resisting materials. The Lyceum Theatre was built in 1834 by Mr. Samuel Peto, from the designs of the late Mr. Samuel Beazley, and possesses advantages, as regards position, which are enjoyed by but few of the London theatres. The works required by the Board will be put in hand at once, and will, it is expected, be completed before the re-opening in the beginning of October next.

Arbitration cases are also pending with regard to Drury Lane Theatre and the Royal Music Hall, Holborn, Sir H. A. Hunt being in both cases the arbitrator appointed by the Home Secretary. Notices have also, we understand, been served by the Board upon the owners of the Gaiety Theatre, the Vaudeville Theatre, the Opera Comique, and the Court Theatre, but it is not expected that in these cases the parties will proceed to arbitration, but the alterations will be carried out by the owners in the terms of the notice.

LICENCES TO OPERATIVE PLUMBERS.

At a meeting of the Birmingham Town Council held on the 1st inst., Alderman Cook presented a memorial from the master-builders against the scheme for the insurance of water-fittings. It stated that though they fully appreciated the efforts the Water Committee were making to prevent the present waste in the town, they were unanimously of opinion that this might be accomplished by an efficient system of inspection without the control of the fittings and repairs being taken by the committee into their own hands, to the detriment of the builders and plumbers of the town. The memorial was received. Mr. T. Martineau then presented the report of the Water Committee, and moved that the regulations for the laying on of water, the execution of repairs and fittings, and the schedule of prices, should be approved, subject to such alterations in detail as the committee might feel desirable to make. One of the most important points they had had to consider was as to the persons who were to become licensed plumbers, and a question had arisen as to the expediency of giving licences to operative plumbers. The committee had thought it right to do so, and they had reason to believe it would give satisfaction to the workmen. It was objected to by the master plumbers, on the ground that the committee would be placing the men on the same footing as the masters, and that this would create a difficulty. That objection, he thought, was based on a misapprehension of the intentions of the committee, and to correct it they issued a second circular, in which they stated plainly that they did not want to make a rule that the master plumbers must employ licensed workmen, but only that builders and decorators should do so. The master plumbers were supposed to know their trade, and might execute their work by any workmen they liked; but with regard to people such as decorators and builders the case was different. It was with those men that the causes of complaint had arisen, because they had employed inefficient men, such as gas-fitters and tinkers, and it was thought desirable to make it compulsory that they should employ licensed workmen. Alderman Cook proposed that the following be added to the resolution, "And taking into consideration that the principle of insurance of fittings is an experiment, the Water Committee be requested to limit any agreement in relation thereto to a period of not more than two years, in order that the Council may obtain experience of the working of the principle before committing themselves finally to the scheme; and further, that the committee be requested to confer with the plumbers and builders in order to carry the scheme into effect with the least possible interference with private trade." Mr. Martineau accepted this amendment as a rider to the resolution of the committee, which was adopted by a large majority.

CHEESE-ROOM ROOF.

Sir,—What is found to be the lightest, *coolest*, most durable, and cheapest covering for cheese-room roofs outside and inside? I have a very old thatched roof, but with oak timbers, and think some sort of tiles will be best. Although not so cool as thatch, old oak rafters are bad for nailing either battens or laths. I want it as light as possible. Old Roof.

*** We printed some letters on the subject of light roofs not long ago.

ST. PANCRAS WORKHOUSE COMPETITION.

Sir,—With reference to your announcement as to the above competition, permit us to state that Mr. Cates, the referee, did *not* report that the gentlemen named were the only ones who had complied with the requirements of the Local Government Board.

Wilson, Son, & Aldwinckle.

PROVINCIAL NEWS.

Carlisle.—The Carlisle and Cumberland Banking Company (Limited) are making extensive alterations to the bank premises in Devonshire-street, formerly occupied by Messrs. Mackie, Davidson, & Co. The ground-floor is being transformed into shops, and the upper floors into suites of offices, caretaker's rooms, &c. The contract for the whole of the works is in the hands of Mr. Thomas Milburn. Mr. George D. Oliver, of Carlisle and Workington, is the architect.——The drill-shed of the 1st C. R. Volunteers is to have a new roof. The old wooden one (being in a dangerous condition) is to be replaced by an iron one. The height of the building is also being increased, and other improvements are in progress. The tender of Messrs. Pratchitt Bros., of Carlisle, has been accepted for the ironwork, and that of Messrs. W. & H. Davidson for the rest of the works. Mr. Geo. Dale Oliver is the architect.

Driffield.—A special meeting of the Local Board was held on the 24th ult. for the purpose of considering a minute from the Waterworks Committee, recommending the adoption of certain plans and specifications for the construction of waterworks, prepared by Mr. Bruce, C.E., of Hull. The works are estimated to cost 5,000*l*. Mr. W. O. Jarratt proposed the adoption of the minute, which was seconded by Mr. White. Mr. Forster proposed as an amendment that the opinion of the parish should be taken on the matter before the works were further proceeded with, but after a long and warm debate, the original motion for the construction of the works was carried, the voting being 7 to 4.

Warrington.—At a meeting of the Warrington Town Council, on the 1st inst., Alderman Davies made a speech in favour of the Manchester tidal navigation scheme, and moved,—"That this Council views with satisfaction the promotion of an improved tidal navigation of the river Mersey up to Manchester, and that support be given to the scheme, feeling that any such improvement will be conducive to the interests of the town and trade of Warrington, and be the best means of enabling the Corporation to prevent the floods to which the lower parts of the borough are subject." Alderman Keen seconded the proposition, which was warmly received and carried unanimously. A petition on the subject to the Board of Trade was also adopted.

Bristol.—The new Bedminster Police-station was formally opened on the 24th ult. The buildings have been erected from plans prepared by Mr. H. Crisp, architect, Bristol. The premises occupy the site of the old station on the Causeway, and cover an extensive area, having a frontage of 108 ft. to the street, and extending backwards 150 ft. to New Charlotte-street. The buildings, which are constructed of Pennant stone, with freestone dressings, form three sides of a rectangle. The structure is in the castellated style, and a prominent feature in the design is a central square tower, rising to the height of 50 ft. above the ground. In the tower is placed a large illuminated clock, the gift of Mr. E. S. Robinson. The ground-floor of the northern wing of the building is devoted to the charge room, and this apartment, like all the others in the edifice, is floored with quartz-finished concrete, laid down by Messrs. Homan & Rogers, of Manchester and London. The cells are seven in number, and each is 12 ft. long, 12 ft. high, and 6 ft. wide, and is floored with Claridge's asphalte. The walls are lined with white glazed bricks (supplied by the Farnley Iron Company, Leeds). The locks and fittings of the doors are of extra strength, and have been furnished by Messrs. Murrell, of London. The cells are warmed by Haden's (Trowbridge) heating apparatus. The general contractor was Mr. Wm. Veals, Upper Maudlin-street.

Weston-super-Mare.—The second wing of the West of England Sanatorium, at Weston-super-Mare, which has just been completed, has been erected by Mr. A. J. Beaven, of Bedminster, Bristol, from the designs and under the superintendence of Messrs. Price & Wooler, architects, Weston-super-Mare. The building stands in three acres of ground, at the back of which are the sands, forming excellent bathing-ground for the patients. The section which was opened about ten years since consists of the quarters for women and children, and offers accommod a tion for fifty patients, and the central part, which includes the main entrance. The part now completed is built upon exactly the same plan as the first section, and will be for men, it offering accommodation for fifty more patients, making 100 in all. The building, which is Collegiate in style, forms a quadrangle. In the entrance-hall is a carved open screen, erected to the memory of the late Miss Hicks, of Bath. Over the screen is a gallery which leads from the men's to the women's block. On either side of the doorway is a stained-glass window, by Mr. Bell, of College-green, Bristol,—one representing "Faith" and the other "Hope," the former the gift of Mrs. Birkett and the latter that of Mrs. John Harvey. The passages are laid with Maw's tiles. Adjoining the kitchen is a drying-room, with furnaces, and a hot-water supply for use in baths, which are provided for every patient, in both sections of the building. The upper story is reached by means of a substantial stone staircase, lighted by a window, the design also of Mr. Bell, and filled with cathedral glass. Attached to the Sanatorium, on the southern end, is a chapel in the Early English style, which will seat 120 persons, including the accommodation in the gallery. At the west end are nine stained-glass windows, executed by Mr. Gibbs, of London, a stone pulpit, and also a fine organ. The chapel, it should be added, was built some years since. The heating of the building was carried out by Messrs. Jones & Hudson, of Redcliff-street, Bristol.

Brighton.—At a meeting of the Brighton Sewers Board on the 1st inst., a report was read from the Surveyor (Mr. P. C. Lockwood) embodying some suggestions made by Sir J.

Bazalgette, with reference to the intercepting sewer, in his report as to the state of the Brighton sewers generally. The Committee resolved, "That the Surveyor to the Board do prepare plans and an estimate of the cost of constructing an outfall for storm-water at Roedean, as suggested by Sir Joseph Bazalgette." They also decided to call the attention of the Hove Commissioners to the recommendations of Sir Joseph Bazalgette, and requested them to cause catchpits of sufficient size to intercept the road detritus, to be formed under the street-gullies in Hove. The Board adopted the recommendations of the Committee.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Bath.—On the 6th ult. the new church at the Roman Catholic College, Prior Park, was opened. It was the intention of a former Roman Catholic Bishop of Clifton (Dr. Baines) to build a church for the college (of which he was the founder), and he made considerable preparations to that end. It was left, however, to his successor, Bishop Baggs, to lay the foundation stone in 1844. The walls had been carried about half-way up to the roof when the events which led to the closing of the college in 1856 necessarily stopped the building of the church. The college was re-established by Bishop Clifford in 1867, under the presidency of the Rev. Dr. Williams, and in 1871 the building of the church was resumed and carried on to its present stage. It is not yet finished, but it is in such a state as to allow of its opening. The church stands between the two colleges of SS. Peter and Paul, and harmonises very well with the familiar elevation of Prior Park. It is, of course, constructed of Bath stone. The church is regarded as the most perfect model of a Roman basilica existing in England. On the north and south sides the basement of the church is formed of an arcade of eleven arches, above which rises one order of the Corinthian style of architecture, between which are the windows lighting the aisles. Above these is a series of panels which are to be filled with scenes from the lives of SS. Peter and Paul. The porches are at the western ends of the north and south arcades, and upon these will eventually rise two towers, which have at present been carried as high as the belfry floor. The south porch is the public entrance, the north one giving access to St. Paul's College and to the park, and will be used on occasions of processions. The massive doors are of oak, very handsomely carved and panelled. The east end of the building terminates in a semi-circular apse surmounted by a fine dome. Passing to the interior, the nave is separated from the aisles by a range of Corinthian columns raised on pedestals, seven on each side; above these rises the grand cornice, with but a single break on either side, and the nave is covered in with a richly-panelled semicircular ceiling, the windows lighting the nave being groined into it. Between the pilasters on the walls of the aisles, corresponding with the columns, are arches, blank on the south side, but opening to chapels on the north. The apse is semicircular, having three-quarter columns round it, and lighted by a lantern in the dome. Overlooking the chancel are two tribunes over the side entrances. As is usual in churches of the basilica form, the seat for the clergy, which is of oak with carved stall-ends, runs around the apse, the high altar standing detached. The aisles are narrow and raised above the general nave floor, and are intended only for processions or as passages to the various chapels. The north aisle terminates at the east end, in the chapel of the Blessed Sacrament. The south aisle leads to the sacristy, octagonal in form, and lighted by a lantern. The organ-loft, which has yet to be built, will be at the west end of the nave. The total length of the church is 120 ft., that of the chancel being 43 ft.; the breadth of the nave is 27 ft. 6 in. in the clear of the columns, and the height 45 ft. The altar is composed of very rich Italian marbles, the sepulchre for the relics being seen through a beautiful pierced cross of statuary marble. It was made in Rome for the church, and rests upon three steps, also of marble. Only two of the chapels on the north side are as yet ready for their furniture. The first of these, occupying three bays, is dedicated to St. John the Evangelist, and is being finished as a memorial to the late Rev. Dr. Bonomi, Vicar-General of the Diocese. In the recess at the back of the altar is to be fixed a mosaic by Salviati, representing St. John. The next chapel is of one bay, and is dedicated to St. Joseph, and has been finished as a memorial to the late J. J. Scoles, the original designer of the church (who will be remembered by some of our readers as a practising architect), by his son, the Rev. A. J. Scoles, who has completed his father's work. Mr. Bladwell has been the contractor for the whole of the work, except the ceiling, which was entrusted to Mr. P. J. McManus, of London.

STAINED GLASS.

St. John's Wood.—The east window of the chancel of St. Stephen the Martyr, Avenue-road, has just been filled with stained glass. The artist, Mr. W. G. Bailey, has treated the five lights with white Perpendicular glass, which relieves the subjects. The Adoration of the Magi and the Shepherds fill the centre three lights, and the two remaining outer lights contain each two subjects, namely, the Annunciation, and the Child Jesus in the Temple, and the Agony in the Garden, and the Three Maries at the Holy Sepulchre. In the tracery above the five lights are St. Stephen the Martyr, patron of the church; St. John the Baptist, patron of the district; and St. Paul the Apostle, patron of the See of London. At the foot of the window is the legend,—"To the glory of God, and in memory of Alfred Swaine Taylor, M.D., F.R.S., and Caroline, his wife. This window is erected by their daughter and son-in-law, Edith and Frederic Methold, A.D. 1882. The effect, during some parts of the day, will be materially improved when the west window of the nave is also filled with stained glass, as the full glare of light through it now detracts from the effect of the new work.

Devynock.—A four-light window, representing the Nativity, Presentation, Crucifixion, and Ascension of Our Lord, has just been erected in the parish church of Devynock, near Brecon, in memory of the Rev. David Parry, late vicar of the parish. The work is from the studios of Messrs. Mayer & Co.

Miscellanea.

The Welding of Cast Steel.—On the 2nd inst. a committee of the Royal Scottish Society of Arts, Edinburgh, accompanied by several of the members, visited St. Margaret's Works to witness the welding of cast steel by the process recently described to the Society by Mr. Benjamin Askew, and of which we have already made mention. The welding is done by means of powdered stucco used just as smiths are accustomed to use sand in other weldings. Four pieces of cast-steel scraps from two different makers were welded into one square bar, which was afterwards broken. The fracture showed no mark of the joining, but the grain of the two qualities of steel could be distinguished. Two old files were welded together and hammered into the shape of a chisel, which was hardened, tempered, and sharpened, and then used to cut an inch bar of iron. The process is so simple that any skilled smith may practise it; he must use heat enough to flux the stucco, but not so much as to fuse the steel.

Turner Drawings and Sketches at Glasgow.—A new series of sketches and water-colour drawings, selected from the Turner Collection in the National Gallery to replace the set recently withdrawn, has just been lent to the Parks' Committee by the trustees of the National Gallery, and are now on view in the Corporation Galleries, Glasgow. A short time ago a portfolio of facsimile reproductions of early Italian engravings was presented to the Galleries by the trustees of the British Museum. These have now been framed and exposed in one of the upper galleries.

Wick Harbour.—A deputation from the Pulteney Harbour Board have been in London arranging with the Treasury officials for a loan to carry out the new works for the extension and improvement of Wick harbour in accordance with plans prepared by Mr. Barron, C.E. They have been successful in their mission. The Government has arranged to lend 30,000*l.* for starting the new works, reserving consideration of further advances till the results of the expenditure of that sum are seen.

Featherstone.—On the 18th ult. the Archbishop of York re-opened the ancient and interesting Church of All Saints, at North Featherstone (now so-called), near Pontefract, which has been closed for about two years, while undergoing restoration. Messrs. Healey, architects, of Bradford, took the restoration in hand, and with the aid of Messrs. Smith & Freeman, of South Featherstone, builders, have brought the work to a successful completion. Christ Church, Oxford, is the lay rector, and this wealthy society gives 300*l.* to the work of restoration. The south portion has been entirely rebuilt, and the tower, which contains three bells, partially restored. The font, which is supposed to have been brought from Pontefract during the time of the Civil Wars, bears a curious inscription, and also the name and coat of arms of John de Baghill. During the work some very interesting discoveries came to light. The roof, which before permitted the rain to come through, has been replaced by an open one of oak, and the walls have been cleansed and repaired.

Presentation to Mr. E. Melville Richards, C.E., late Borough Surveyor.—On Thursday last a deputation of magistrates and councillors waited upon the above-named gentleman at his private residence and presented him with an address handsomely illuminated and engrossed on vellum, expressive of their high appreciation of his past valuable services as their borough surveyor. The address is signed by upwards of 300 magistrates, councillors, and influential ratepayers of Leamington.

London and Middlesex Archæological Society.—The annual excursion of this Society will take place on Thursday, August 17th, to Silchester, where members and friends will assemble at two p.m. Mr. J. G. Hilton Price, F.S.A., will explain the famous antiquities of the place, and others are expected to assist. The South-Western Railway has kindly consented to issue return tickets from Waterloo to Basingstoke at a reduced rate.

The War Office have instructed Messrs. Clark, Bunnett, & Co., Limited, of Rathbone-place, to supply several iron buildings for stores for shipment to Egypt. The *employés* of this company had their annual dinner on Saturday last, the London men going to Teddington, and the men at the Paris Works going to Montmorency, near Paris, and the New York *employés* to Manhattan Beach.

New Steelworks at Workington.—At Workington, on the 4th inst., Mr. R. H. Hodgson, contractor, of Workington, received the contract for the erection of the new steel works for Messrs. Cammell & Co., of Sheffield, which are to be added to the present Derwent Ironworks at Workington. It is expected that a start will be made next week. The contract will amount to close on 50,000*l.*

Working Men's Exhibition.—A Working Men's Exhibition is to be opened by the Lord Mayor, on Saturday, September 23rd next, at Brunswick House, Vauxhall. The applications for space are numerous, and intending competitors should at once apply, enclosing stamped envelope for rules, to the secretary, Mr. E. E. Smith, at Brunswick House, Vauxhall.

Bristol.—At a meeting of the Town Council on the 8th inst., Mr. Thos. Howard, M. Inst. C.E., announced his intention of shortly resigning his appointment of Engineer to the Bristol Docks, and Mr. J. W. Girdlestone, Assoc. Inst. C.E., was appointed as his successor. Mr. Howard will still be retained as consulting engineer.

Liverpool.—The *Liverpool Daily Post* announces that Lord Sefton has given a site in Ullett-road, between Sefton Park and the Cemetery, for the church which is about to be built in memory of the late Mr. Robert Horsfall. Mr. J. L. Pearson, R.A., has been instructed to prepare plans for the memorial church.

New Bakery at Wanstead.—Mr. H. W. Nevill has commenced the erection of a new bakery at Harrow-road, Wanstead Flats. The architect is Mr. W. T. Farthing, and the builder Mr. J. Woodward, of Wilson-street, Finsbury.

Valuations.—Mr. Wm. Eve, of Union-court, Old Broad-street, who has recently completed the valuation of Alton Union, has been instructed to re-assess the whole of the property in the Reading Union.

The Wagon Lifts at the extensive works of the Great Eastern Railway Company, at Shoreditch, and which has been specially noticed, was constructed and put up by Messrs. Lewis & Lewis, of Cambridge Heath-road.

Technical Education.—The Coach and Coach-harness Makers' Company, in continuation of their action in former years, offer for 1883 a number of prizes for competition among persons engaged in the trade of coachmaking, whether clerks, foremen, workmen, or apprentices. Each of the prizes will be accompanied with the certificate of the company. The following is a list of the prizes offered:—For freehand drawings of foliage or ornaments from Nature, or models in ink or crayon, in outline (not shaded): 1st prize (among former prize-winners and others, no limit as to age), the Company's silver medal and 4*l.*; 2nd prize (excluding former prize-winners, no limit as to age), the Company's bronze medal and 3*l.*; 3rd prize (for apprentices and others under twenty-one years of age), the Company's bronze medal and 2*l.*; separate prizes for sons of British coachmakers being educated and trained as master coachbuilders, a silver-gilt medal. For working drawings of one-horse wagonette: 1st prize (for apprentices and others under twenty-one years of age), the Company's silver medal and 3*l.*; 2nd prize (for apprentices and others under twenty-one years of age), the Company's bronze medal and 2*l.*; separate prizes for sons of British coachmakers being educated and trained as master coachbuilders, a silver-gilt medal. For full-sized working drawings on paper of a gentleman's phæton, mail or spider shape: 1st prize, the Company's silver medal and 15*l.*; 2nd prize, the Company's bronze medal and 10*l.*; 3rd prize, the Company's bronze medal and 5*l.*; separate prize for sons of British coachmakers being educated and trained as master coachbuilders, a silver-gilt medal.—*City Press.*

Milner's Safe Company. — The eighth annual meeting of this company took place last week, at the Cannon-street Hotel, Mr. C. T. Ritchie, M.P. (chairman), presiding. A report was presented stating that the net profit, after making all proper deductions, was 22,157*l.* 11s. 4d., from which must be deducted interest on debentures, 1,739*l.*, leaving 20,418*l.* 11s. 4d. The directors proposed to declare a dividend of ten per cent. per annum, which, with 3,500*l.* paid by way of interim dividend, would absorb 14,000*l.*, leaving a balance to be carried to the reserve fund of 6,418*l.* 11s. 4d. It was proposed to transfer in further liquidation of the good-will account, 2,000*l.* from the reserve fund, which would then stand at 10,339*l.* 10s. 7d. The debenture loan had been, since the last general meeting, reduced by a further sum of 1,500*l.* at the third annual drawing, under the debenture trust deed, leaving the debenture loan at 41,700*l.*, of which the company held 10,000*l.*, reducing the amount practically to 31,700*l.* The directors had considered it in the interest of the shareholders to recommend the payment of a dividend of ten per cent. per annum, rather than a larger dividend, which the earnings of the company would justify. Sir H. B. Loch, K.C.B., seconded, and the report was adopted unanimously.

The Sewerage of Brighton.—The *Lancet* of this week publishes the report of Mr. Bailey-Denton on the sewerage system of Brighton, with special reference to the ventilation of the sewers. This exposition of facts given by him will, he trusts, "serve to show that no amount of money expended in palliations such as those recommended by Sir Joseph Bazalgette will render the sewerage of Brighton what it ought to be. As a health resort Brighton is often frequented by invalids, who are specially sensitive of bad smells; and unless the sewers have a constant discharge, associated with a perfect system of sewer ventilation, the present evils will be maintained." Mr. Bailey-Denton concludes his report, after stating that ventilation can be readily effected at a moderate outlay, by saying that so long as Brighton remains with a tide-locked sewer extending along the whole length of its frontage to receive surface-waters as well as sewage, without making an effort to prevent their detention, there will be cause for the strictures made by the *Lancet* on the sewerage of Brighton.

Decoration of Glass without Heat.—Ernest Dumas has presented a favourable report upon the decoration of glass by the method of M. Lutz-Knechtle, of Frogen, Switzerland. He adds zinc white or ultramarine to a solution of silicate of soda or of potash, so as to produce colours which can be applied to the glass in various ways. These colours dry very quickly, and will bear hard washing.—*Chron. Indust.*

Sewerage Works at Shepton Mallet.—The *Shepton Mallet Journal* of the 4th inst. contains a report of what took place at the last meeting of the local Board of Health. Included in the minutes of the Sewerage Committee was the following passage:—

"The question of the use of clay *versus* cement was discussed at a committee meeting on the 20th of July, when Mr. Catley stated that the contract provided that cement should be used in jointing the pipes, but that he had power as engineer to alter the material, and that at certain places where pipes had been laid through water, there clay in his opinion was preferable, and in a few joints of the sort he had authorised the contractor to use clay instead of cement."

On this head, however, Mr. Spire, the clerk of works, in a report made to the Board on the progress of the works, says:—

The branch line at West Shepton from the manhole by Mr. John H. Pullen's garden-doors to the road opposite Mr. E. H. Stone's Farmhouse, not being satisfactory, has been re-opened, when it was found that three powerful springs of water had opened in the trench and burst the joints of some of the pipes. This water has now been carried down the trench by means of extra pipes placed at a lower depth, the sewage pipes have been carefully relaid principally in cement, and well puddled with clay, and I am of opinion this line of pipes will now be found properly watertight.

Public Offices Site Act.—On Saturday last was issued the "Public Offices Site Act." Its execution will effect some considerable alterations in Spring-gardens and Charing-cross in connexion with the erection of the new buildings for the Admiralty and War Departments, and will involve the removal of St. Matthew's Chapel, Spring-gardens. The schedules annexed to the Act show the number of houses to be purchased in Spring-gardens, Whiteball, and Charing-cross. The Commissioners of Public Works are empowered to acquire the land specified for the new public offices. The Commissioners of Woods may, with the approval of the Treasury, provide out of the land revenues of the Crown a new Office of Land Revenue Records in lieu of the existing office. The passage and right of way at Spring-gardens will be closed.

Compensation Case. — A compensation claim, at the instance of the trustees of the parish estate of St. John the Baptist upon Walbrook, against the Metropolitan and Metropolitan District Railways, was heard at the Guildhall, before the Recorder and a special jury, the property of the claimant being required for the completion of the Inner Circle scheme. The claimant was Mr. H. Mathews, architect and surveyor, Cloak-lane, Cannon-street, who had an unexpired term of nine years of his lease to run, and who claimed 2,906*l.* as compensation from the companies for the compulsory surrender of his rights. Skilled witnesses were called for the companies, who valued the property at from 2,293*l.* to 2,314*l.* In the result the jury awarded the sum claimed, 2,906*l.*

The Temple and the New Law Courts.—The Strand Board of Works have received a communication from the Benchers of the Middle Temple, asking permission to construct a subway from the Middle Temple to the New Law Courts. The Board granted the application on condition that the public should have the use of the subway, and that it shall be closed at a definite hour at night, so that it shall not be a refuge for bad characters.

Etchings of Old Southwark. — Messrs. Nichols & Co. have arranged with Mr. Percy Thomas to make an etching of the old White Hart Inn Yard, Southwark. This inn dates back for some five centuries, is often mentioned by Shakespeare, was the head-quarters, in 1450, of Jack Cade, and in our own times has been described by Charles Dickens as a scene in Pickwick.

Haworth.—There has lately been placed in the floor of the chancel of the new parish church a brass, designed and executed by Messrs. Hart, Son, Peard, & Co., in memory of Charlotte Brönté, the eminent authoress, who for many years resided at the vicarage, and where her works for the most part were written.

TENDERS

For repairs, &c, at Chestnuts, Crouch-end, for Mr. Hicks. Mr. J. Farrer, architect:—

	Repairs, &c.	New Porch.
Southcott	£158 0 0	—
Oldis	114 0 0	£83 0 0
J. S. King (accepted)	127 0 0	39 0 0

For storm-relief sewer works in Clapham, Battersea, Wandsworth, and Putney, for the Metropolitan Board of Works. Sir J. Bazalgette, engineer:—

Munday & Sons	£245,000 0 0
W. Webster	240,300 0 0
Gill Bros.	199,000 0 0
Bull & Sons	185,000 0 0
Cook	182,000 0 0
Mears	180,000 0 0
J. Pizzey	177,750 0 0
Walker	175,850 0 0
Foote & Co.	175,000 0 0
Nowell & Robson	169,850 0 0
Mowlem & Co.	169,000 0 0
Kellett & Bentley	161,079 2 4
Pearson & Co.	160,500 0 0
Nelson & Co.	159,790 0 0
Lovatt	155,500 0 0
Macrae & Macfarlane	155,121 0 0
Williams, Son, & Wallington	154,700 0 0
W. Waddle (accepted)	151,995 19 0

For superstructure of new building, 11, Abchurch-lane, King William-street (contract No. 2), for the London and Provincial Fire Insurance Company (Limited). Messrs Davis & Emanuel, 2, Finsbury-circus, architects. Quantities by Mr. F. Downing, 7a, Whitehall-yard:—

Foster & Dicksee, Rugby	£8,988 0 0
Ashby & Horner	8,592 0 0
David King & Sons	8,500 0 0
Colls & Sons	8,476 0 0
John Mowlem & Co.	8,393 0 0
Kirk & Randall	8,359 0 0
Lucas Bros.	8,324 0 0
G. Trollope & Sons	8,183 0 0
John Grover	8,163 0 0

For extension of nave and aisles, erection of chancel, vestry, organ-chamber, chancel-aisle, restoring the interior, and new seating, for Narborough Church, Leicester. Mr. F. Bacon, Newbury, architect. Quantities by Mr. W. Clifton, Stoneygate, Leicester:—

Fox Bros.	£3,728 10 0
Fast	3,665 0 0
Black	3,572 0 0
Foster & Dicksee	3,292 0 0
Harrolds	3,261 14 0
Herbert	3,242 0 0
Roberts & Son	3,240 0 0
Law & King	3,190 0 0
Thrall & Payne	2,982 0 0
Stirk	2,947 12 8
Langton & Son (accepted)	2,904 3 0

For house at West End-lane, Kilburn, for Mr. Lewis Spain. Mr. Henry John Hansom, architect. Quantities by Mr. Henry Smith:—

B. Cooke & Co.	£2,800 0 0
J. Grover	2,755 0 0
J. Hobson	2,735 0 0
J. Gregory	2,690 0 0
B. E. Nightingale	2,643 0 0
Lathey Bros.	2,630 0 0
W. Smith	2,552 0 0
Richens & Mount	2,532 0 0
Stimpson & Co.	2,459 0 0
Turtle & Appleton	2,430 0 0
Dainton	2,295 0 0

For alterations at No. 136, Richmond-road, Dalston, for Dr. Brewer. Mr. Benjamin Tabberer, architect:—

Norris	£1,730 0 0!
Conder	1,390 0 0
Taylor & Parfitt	1,139 0 0
Steel Bros.	1,120 0 0
Shurmur	1,089 0 0
Ashton	935 0 0!

For alterations to White's Club-house, No. 37, St. James's-street, Piccadilly, for Mr. Percival. Mr. Thos. Milbourn, architect:—

Sprake & Foreman	£2,154 0 0
Ashby Bros.	2,071 0 0
W. H. Salmon	2,035 0 0
R. Conder	1,780 0 0
Taylor & Parfitt	1,758 0 0
W. & E. Curtis	1,748 0 0

For the erection of a house in Barrowgate-road, Chiswick, for Mr. F. J. Alexander. Mr. J. Coverdale Bilton, 2, Avenue Market-terrace, Turnham-green, architect:—

Schofield & Co., London	£1,600 0 0
H. J. Whitman, Chiswick (accepted)	1,120 0 0
W. Blackburn, Chiswick	1,107 0 0

For completion of houses in Milton-road, Harrow-on-Hill. Mr. J. H. Taylor, architect:—

Pleece (accepted)	£252 10 0

For formation of roads, sewers, and filtering-tanks at Neasden, for Mr. R. Richards. Mr. J. H. Taylor, surveyor:—

Mears	£1,200 0 0
Nowell & Robson	1,073 0 0
Beadle Bros.	1,062 0 0
Killingback	945 0 0
Felton	929 0 0
Neave & Son (accepted)	925 0 0

For alterations and additions to Nos. 4 and 5, Manchester-terrace, Kensal-town. Mr. J. H. Taylor, architect:—

Handover	£175 0 0
Ward	139 0 0
Painter (accepted)	130 0 0

For completion of Nos. 5 and 6, James-terrace, Kensal-road. Mr. J. H. Taylor, architect:—

Ward	£425 0 0
Lamble	395 0 0
Hook	312 0 0
Handover	295 0 0
Sanders (accepted)	287 0 0

For repairs to the Falcon, Kilburn-lane. Mr. J. H. Taylor, architect:—

Waymouth	£167 0 0
Lamble	150 0 0
Wells	140 0 0
Fairthorne & Impey	136 10 0
Handover	135 0 0
Spurgeon (accepted)	124 0 0

For the erection of business premises and residential chambers, Old Brompton-road, for Mr. W. Glover. Mr. William H. Collbran, 94, Gloucester-road, South Kensington, architect. Quantities by Messrs. Strudwick & Mennie:—

	General Work.	Hot-water Services
E. Braid	£6,270 0 0	£160 0 0
McLachlan	6,190 0 0	145 0 0
H. Toten & Sons	6,300 0 0	135 0 0
Kirk & Randall	6,231 0 0	179 0 0
Colls & Sons	6,187 0 0	182 0 0
Martin, Wells, & Co.	6,200 0 0	110 0 0
B. E. Nightingale	6,070 0 0	178 0 0
Thomas Boyce	6,050 0 0	150 0 0
Higgs & Hill	5,940 0 0	134 0 0
Ashby Bros.	5,957 0 0	168 0 0
G. H. & A. Bywaters	5,879 0 0	167 0 0
Perry & Co.	5,698 0 0	120 0 0
Robert Smith	4,845 0 0	70 0 0

For the erection of business premises and residential chambers, Old Brompton-road, for Mr. R. King. Mr. William H. Collbran, architect. Quantities by Messrs. Strudwick & Mennie:—

	General Work.	Fireproof Flooring.
H. Toten & Sons	£9,700 0 0	£500 0 0
E. Braid	9,570 0 0	398 0 0
Kirk & Randall	9,513 0 0	513 0 0
Thomas Boyce	9,490 0 0	480 0 0
McLachlan & Sons	9,479 0 0	400 0 0
Colls & Sons	9,420 0 0	526 0 0
Martin, Wells, & Co.	9,415 0 0	500 0 0
Higgs & Hill	9,240 0 0	420 0 0
Ashby Bros.	9,100 0 0	578 0 0
B. C. Nightingale	8,993 0 0	520 0 0
G. H. & A. Bywaters	8,975 0 0	500 0 0
Perry & Co.	8,889 0 0	500 0 0
Robert Smith	8,480 0 0	484 0 0

For assurance offices, St. Giles, Norwich. Mr. A. G. Lacy, architect:—

North	£1,682 0 0
Hawes	1,655 0 0
Hall	1,500 0 0
Youngs	1,500 0 0
Wilkin	1,499 0 0

For the erection of detached villa residence at Nether-street, Finchley, for Miss Boulton. Mr. Thomas Newell, architect. Quantities by Mr. Sidney Young:—

Woodward, Finsbury	£3,100 0 0
Nye, Ealing	2,920 0 0
Staines & Son, Great Eastern-street	2,896 0 0
Gibson, Southall	2,784 0 0
Kearley, Uxbridge	2,700 0 0
Goodman, Holloway (accepted)	2,699 0 0

For making roads, &c., and kerbing the same, on the Queen's Park Estate, Seaford, Sussex, for the Christchurch and Bournemouth Freehold Land Society. Messrs. Kemp, Welsh, & Pinder, Surveyors to the society:—

A. Oliver	£2,362 0 0
F. Harrison	1,575 0 0
Woodham & Fry, London (accepted)	1,560 0 0
J. Dibley*	1,190 0 0

* Does not include kerbing.

For proposed additions to St. John's Church, Highbridge, Somerset. Mr. John Norton, architect:—

	Nave aisle.	Chancel aisle.
Charles Trask	£974 0 0	£323 0 0
S. Taylor Harvey	918 0 0	330 0 0
Joseph W. King	941 0 0	272 0 0
W. Cowlin & Son	870 0 0	268 0 0
Coleman Bros.	822 0 0	265 0 0
William Crocker	809 15 0	270 0 0
John Palmer	747 0 0	227 0 0
G. Horne & W. Lynham	725 0 0	230 0 0
Samuel Clarke	548 0 0	240 0 0
James Wilcox	640 10 0	145 0 0

For re-building Nos. 25 and 27, Hall-place, Paddington, to be let in flats, for Mr. Thurgate. Mr. Thomas Durrant, architect:—

Downs	£1,296 0 0
Brighton	1,250 0 0
Smith	1,086 0 0
Phillips	998 0 0
Higgs	967 0 0
Edgar	853 0 0

For drainage and other works on the Eversfield Estate, St. Leonard's-on-Sea. Messrs. Fowler & Hill, surveyors:—

Bull	£599 0 0
Dibley	485 0 0
F. Cruttenden	480 0 0
King (accepted)	375 0 0

For making-up and sewering private roads in the parish of Chiswick, according to plans and sections prepared by Mr. Henry Oliver Smith, C.E., for the Chiswick Improvement Commissioners. Quantities supplied:—

	Group A.	Group B.
Neave & Sons	£11,400 0 0	£6,535 0 0
Joseph Mears	11,301 0 0	6,274 0 0
Wheeler & Hinton	11,019 4 4	6,049 12 10
Mowlem & Co.	10,973 1 4	6,213 14 2
Harry Smith	10,708 0 10	6,126 14 2
G. Aldred	10,696 6 2	6,109 17 4
G. Ball	10,559 17 2	5,763 6 6
G. G. Rutty	10,236 19 10	5,739 3 11
Nowell & Robson	9,743 19 4	5,557 7 9
G. Torkington	8,685 0 0	7,068 15 7

For block of buildings, Lewisham-street, Westminster. Mr. W. Gillbee Scott, 102, Guilford-street, Russell-square, architect:—

Macey & Son	£8,890 0 0
John Grover	8,783 0 0
John T. Chappell	8,460 0 0
Kirk & Randall	8,415 0 0
J. D. Hobson	7,982 0 0
W. Scrivener & Co.	7,929 0 0
T. W. Smith & Son	7,800 0 0
J. & H. Mills	7,800 0 0
Thos. Boyce (accepted)	7,700 0 0
Howard & Dorrell (withdrawn)	7,050 0 0

For Lynn sewers. Mr. W. H. Wheeler, engineer:—

J. Bell, London	£7,876 0 0
Dawes, Lynn	7,704 0 0
Bardell, Bros., Lynn	7,220 0 0
Barwell, White, & Co., March	6,950 0 0
R. Walker, Terrington	6,061 0 0
Pearson, Bradford	5,998 0 0
W. J. Botterill, London	5,933 0 0
Neave & Son, Lewisham	5,830 0 0
W. Rigby, Worksop	5,550 0 0
Cook, Bennett, & Co., Spalding	5,390 0 0

For certain alterations and additions to the English Baptist Chapel, Abercarn, Mon. Mr. E. A. Lansdown, architect, Newport:—

I. Linton (accepted)	£855 0 0

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